OEM

VK80

THE IMAGES USED IN THIS MANUAL ARE USED AS AN ILLUSTRATIVE EXAMPLES. THEY COULDN'T REPRODUCE THE DESCRIBED MODEL FAITHFULLY.

**UNLESS OTHERWISE SPECIFIED, THE INFORMATION GIVEN IN THIS MANUAL
ARE REFERRED TO ALL MODELS IN PRODUCTION AT THE ISSUE DATE OF THIS DOCUMENT.**

GENERAL SAFETY INFORMATION
Your attention is drawn to the following actions that could compromise the characteristics of the product:
• Read and retain the instructions which follow.
• Follow all indications and instructions given on the device.
• Make sure that the surface on which the device rests is stable. If it is not, the device could fall, seriously damaging it.
• Make sure that the device rests on a hard (non-padded) surface and that there is sufficient ventilation.
• When positioning the device, make sure cables do not get damaged.
• Use the type of electrical power supply indicated on the device label. If uncertain, contact your dealer.
• Make sure the electrical system that supplies power to the device is equipped with a ground wire and is protected by a differential switch.
• Do not block the ventilation openings.
• Do not insert objects inside the device as this could cause short-circuiting or damage components that could jeopardize printer functioning.
• Do not carry out repairs on the device yourself, except for the normal maintenance operations given in the user manual.
• Make sure that there is an easily-accessible outlet with a capacity of no less than 10A closely to where the device is to be installed.
• Periodically perform scheduled maintenance on the device to avoid dirt build-up that could compromise the correct, safe operation of the unit.
• Before any type of work is done on the machine, disconnect the power supply.
• Do not touch the head heating line with bare hands or metal objects. Do not perform any operation inside the printer immediately after printing because the head and motor tend to become very hot.

GENERAL INSTRUCTIONS
CUSTOM ENGINEERING S.p.A. declines all responsibility for accidents or damage to persons or property occurring as a result of tampering, structural or functional modifications, unsuitable or incorrect installations, environments not in keeping with the equipment's protection degree or with the required temperature and humidity conditions, failure to carry out maintenance and periodical inspections and poor repair work.

THE CE MARK AFFIXED TO THE PRODUCT CERTIFY THAT THE PRODUCT SATISFIES THE BASIC SAFETY REQUIREMENTS.

The device is in conformity with the essential Electromagnetic Compatibility and Electric Safety requirements laid down in Directives 2006/95/CE and 2004/108/CE inasmuch as it was designed in conformity with the provisions laid down in the following Standards:
• EN 55022 Class B *(Limits and methods of measurements of radio disturbance characteristics of Information Technology Equipment)*
• EN 55024 *(Information Technology Equipment – Immunity characteristics – Limits and methods of measurement)*
• EN 60950-1 *(Safety of information equipment including electrical business equipment)*

GUIDELINES FOR THE DISPOSAL OF THE PRODUCT

The crossed-out rubbish bin logo means that used electrical and electronic products shall NOT be mixed with unsorted municipal waste. For more detailed information about recycling of this product, refer to the instructions of your country for the disposal of these products.
• Do not dispose of this equipment as miscellaneous solid municipal waste, but arrange to have it collected separately.
• The re-use or correct recycling of the electronic and electrical equipment (EEE) is important in order to protect the environment and the wellbeing of humans.
• In accordance with European Directive WEEE 2002/96/EC, special collection points are available to which to deliver waste electrical and electronic equipment and the equipment can also be handed over to a distributor at the moment of purchasing a new equivalent type.
• The public administration and producers of electrical and electronic equipment are involved in facilitating the processes of the re-use and recovery of waste electrical and electronic equipment through the organisation of collection activities and the use of appropriate planning arrangements.
• Unauthorised disposal of waste electrical and electronic equipment is punishable by law with the appropriate penalties.

The format used for this manual improves use of natural resources reducing the quantity of necessary paper to print this copy.

INDEX

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1   INTRODUCTION

1.1   Document structure

This document includes the following chapters:

1	INTRODUCTION	information about this document
2	DESCRIPTION	general description of device
3	INSTALLATION	information required for a correct installation of the device
4	OPERATION	information required to make the device operative
5	CONFIGURATION	description of the configuration parameters of the device
6	MAINTENANCE	information for a correct periodic maintenance
7	SPECIFICATION	technical specification for the device and its accessories
8	CONSUMABLES	description and installation of the available consumables for the device
9	ACCESSORIES	description and installation of the available accessories for the device
10	ALIGNMENT	information required for managing the paper alignment
11	TECHNICAL SERVICE	information required for contacting the technical service
12	ADVANCED FUNCTIONS	information about special functions available with the device

1.2   Explanatory notes used in this manual

NOTE:	Information or suggestions relative to the use of the printer.
ATTENTION:	Information required to guard against damaging the printer.
DANGER:	Information required to guard against operator injury or damage.

2   DESCRIPTION

2.1   Unpacking the device

Remove the device from its carton being careful not to damage the packing material so that it may be re-used if the printer is to be transported in the future.
Make sure that all the components illustrated below are present and that there are no signs of damage. If there are, contact Customer Service.

1. Installation instructions
2. Power supply cable
3. Paper reduction guides *(only for 200dpi models)*
4. Foam packing shell
5. Printer
6. Box
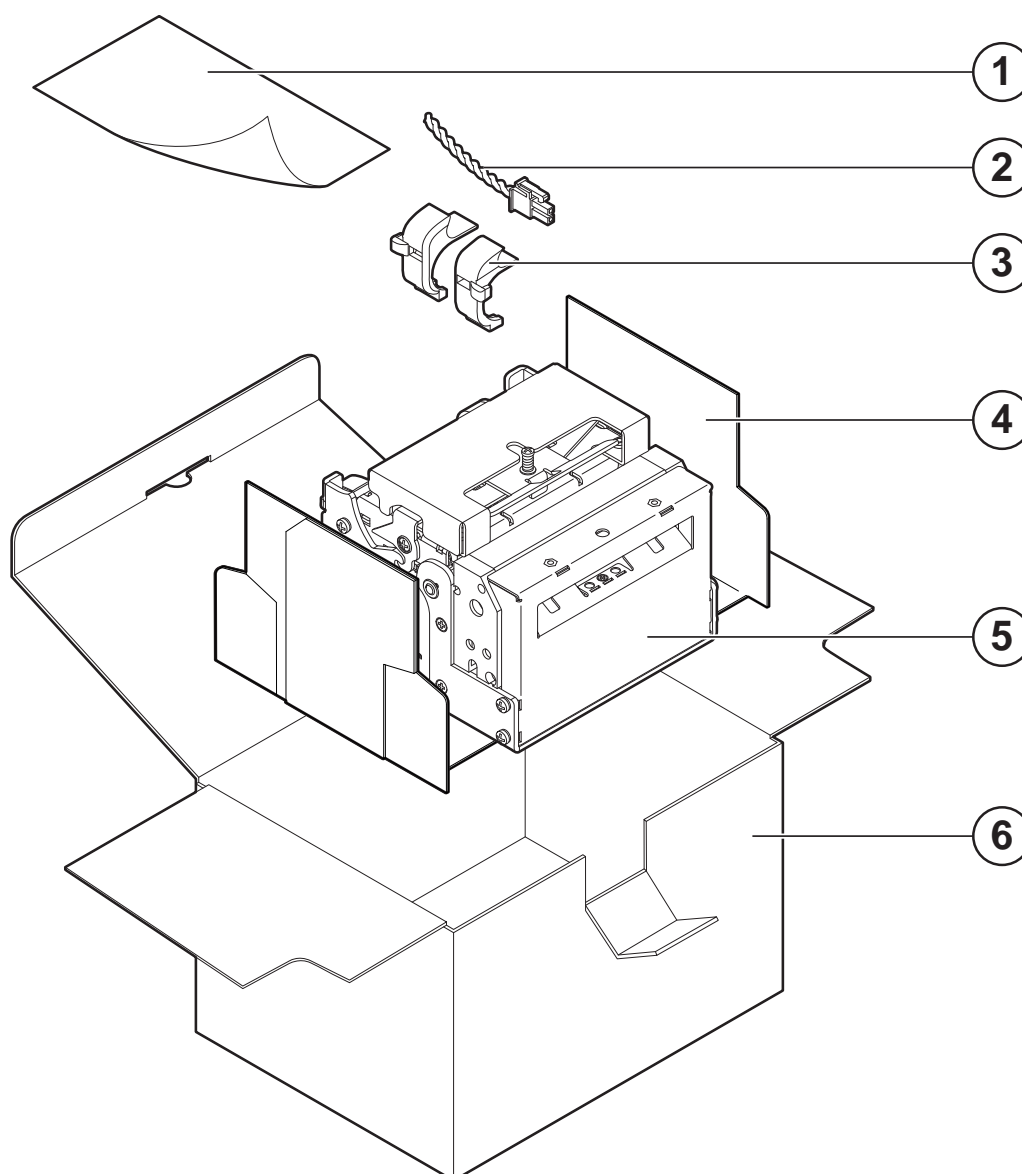
- Open the printer packaging
- Remove the upper packing frame content and remove the packing frame.
- Take out the printer.
- Keep the box, trays and packing materials in the event the printer must be transported/shipped in the future.

2.2 Device component

EXTERNAL VIEW
(200dpi model with rear connectors)

1. FORM FEED key
2. LINE FEED key
3. Status led
4. Opening lever for cover
5. Cutter group
6. Paper output

7. Cursor for paper input
8. Paper iput
9. ETHERNET interface connector
10. USB interface connector
11. Power supply connector
12. Printer chassis

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EXTERNAL VIEW
(200dpi model with lateral connectors)

1. FORM FEED key
2. LINE FEED key
3. Status led
4. Opening lever for cover
5. Cutter group
6. Paper output
7. Cursor for paper input

8. Paper iput
9. Serial interface connector
10. ETHERNET interface connector
11. USB interface connector
12. Power supply connector
13. Printer chassis
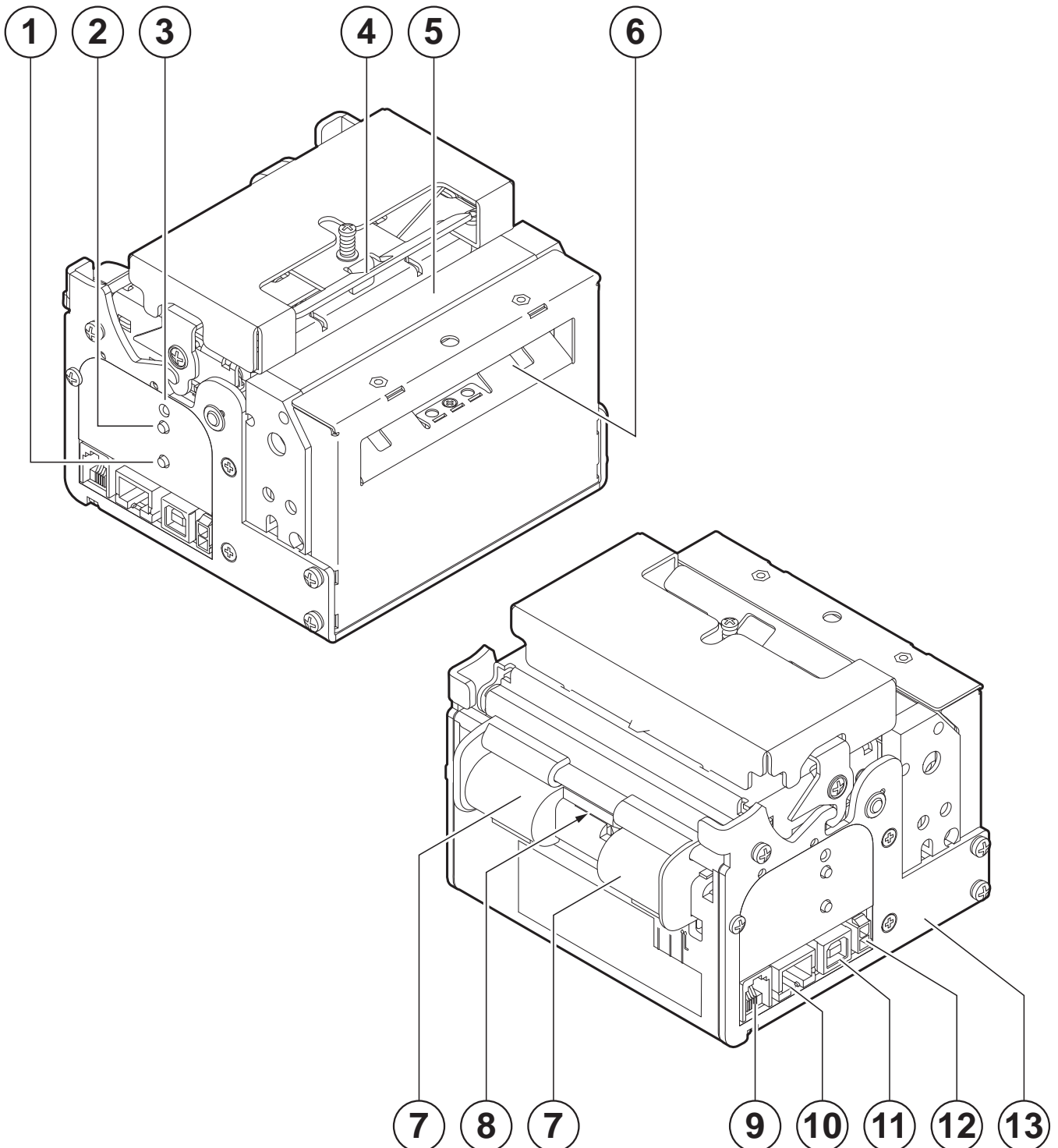
EXTERNAL VIEW
(300dpi model)

1. FORM FEED key
2. LINE FEED key
3. Status led
4. Opening lever for cover
5. Cutter group
6. Paper output
7. Cursor for paper input

8. Paper iput
9. Serial interface connector
10. ETHERNET interface connector
11. USB interface connector
12. Power supply connector
13. Printer chassis

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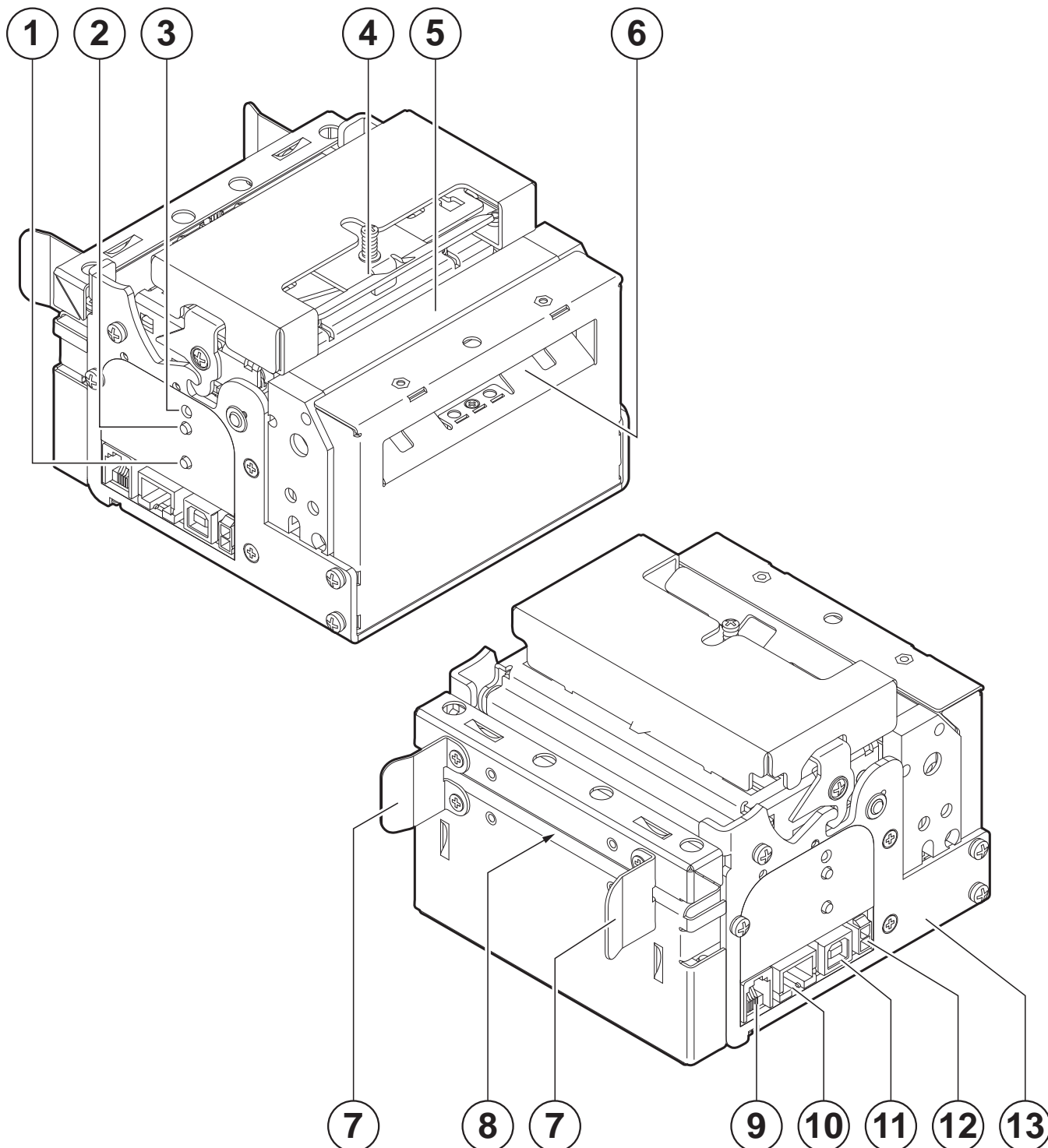
INTERNAL VIEW
(200dpi models)

1. Paper out presence sensors
2. Sensor for printing group opening
3. Paper presence sensor
4. Notch sensor
5. Printing head (with temperature sensor)
6. Connector for near paper end sensor
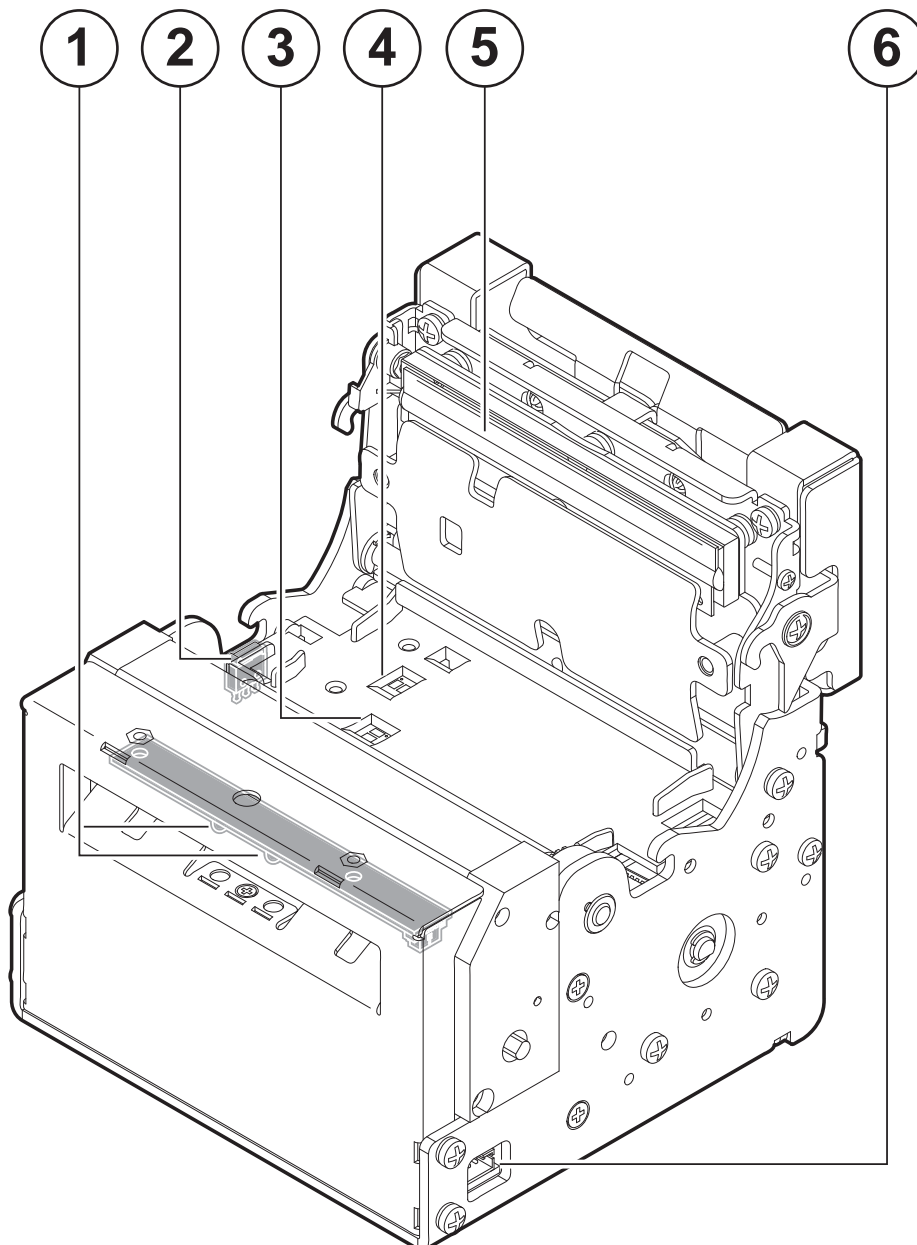
INTERNAL VIEW
(300dpi models)

1. Paper out presence sensors
2. Sensor for printing group opening
3. Paper presence sensor
4. Printing head (with temperature sensor)
5. Notch sensors (transparence)
6. Connector for near paper end sensor

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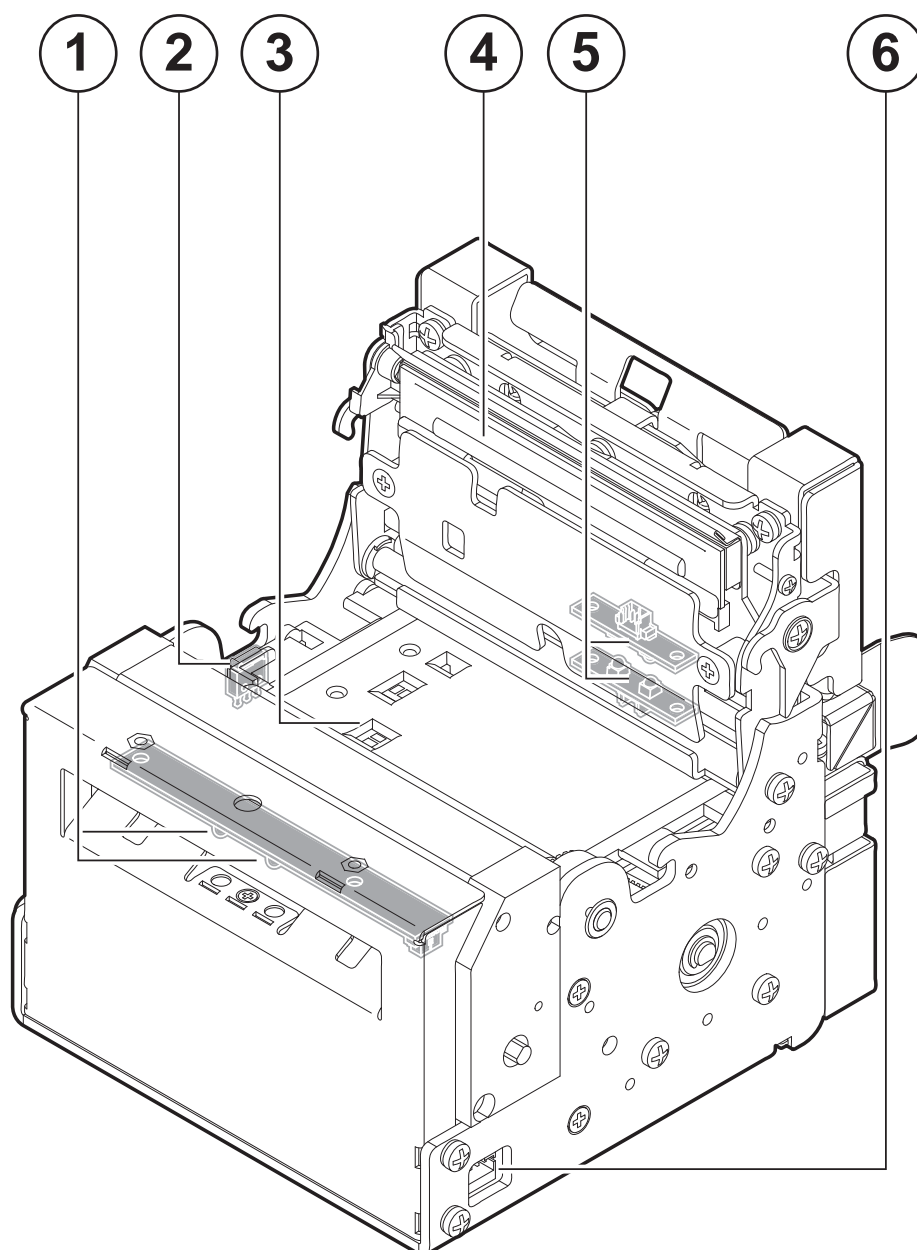
2. DESCRIPTION

PRODUCT LABEL
(all models)

PC = Product code (14 digits)
SN = Serial number
HW = Hardware release

XXXXXXXXXXXXXX   Rx

0000000000000000000

PC   **SN**   **HW**

User Manual **VK80 15**
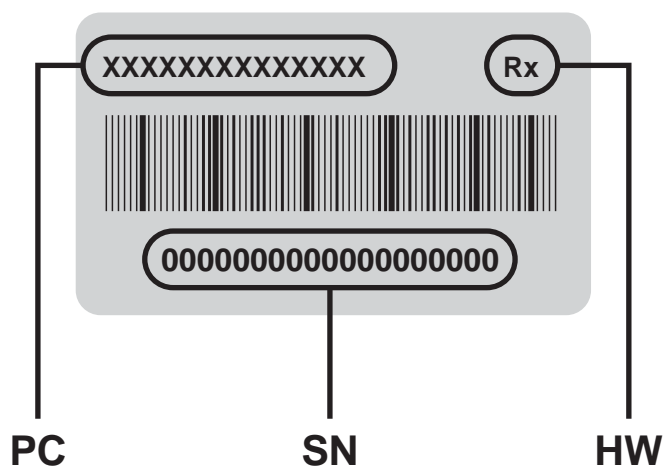
2.3 Key functions

The following figures show the functions of printer's keys according to the operating condition of the device.

POWER UP

LF
FF

Hold down

*printing
SETUP report*

LF
FF

Hold down

*printing
FONT TEST*

LF
FF

Fast push

*skip the
SETUP MODE*

LF
FF

Fast push

enter the SETUP MODE

LF
FF

Fast push

*next
parameter*

LF
FF

Fast push

*modify
selected parameter*

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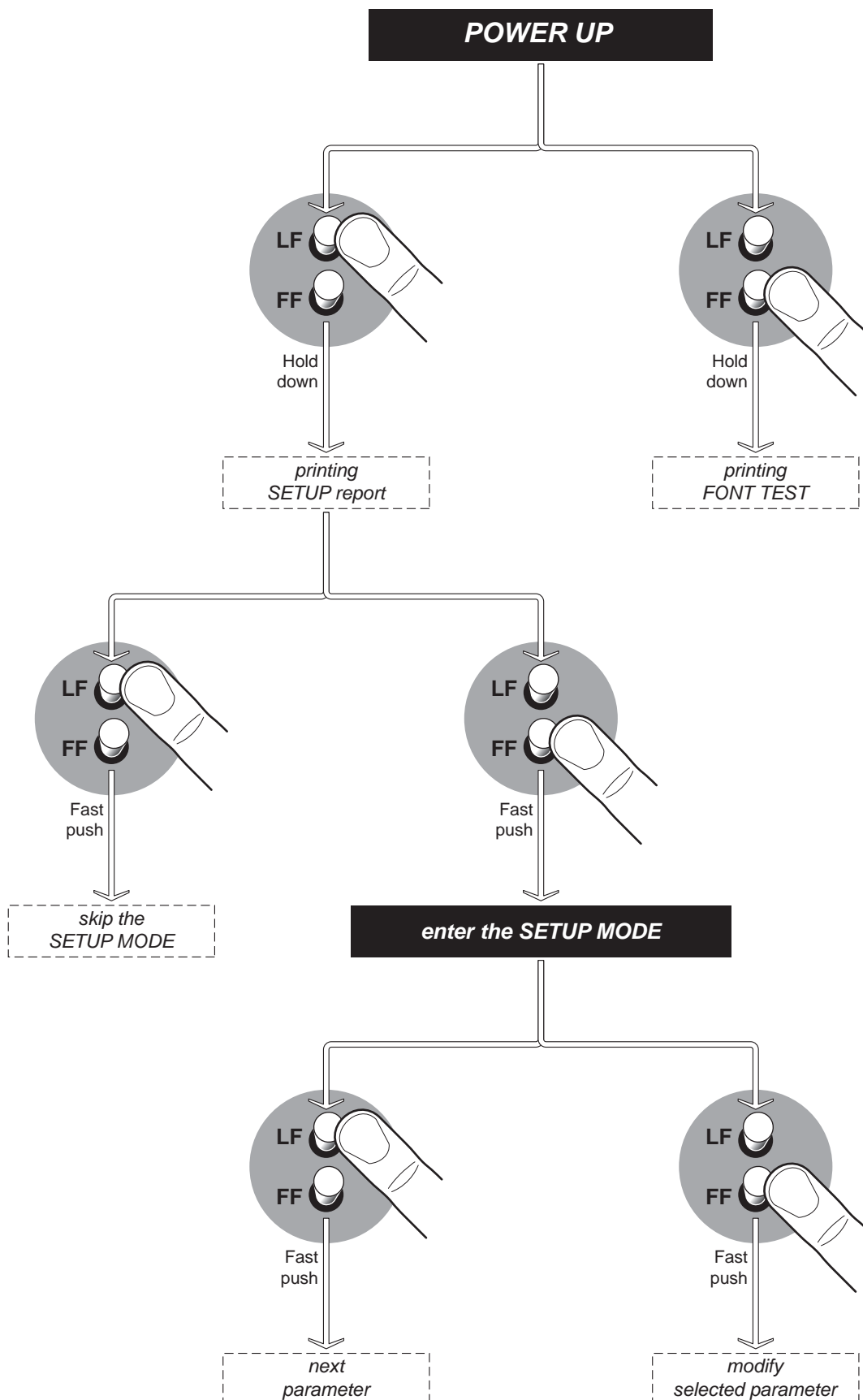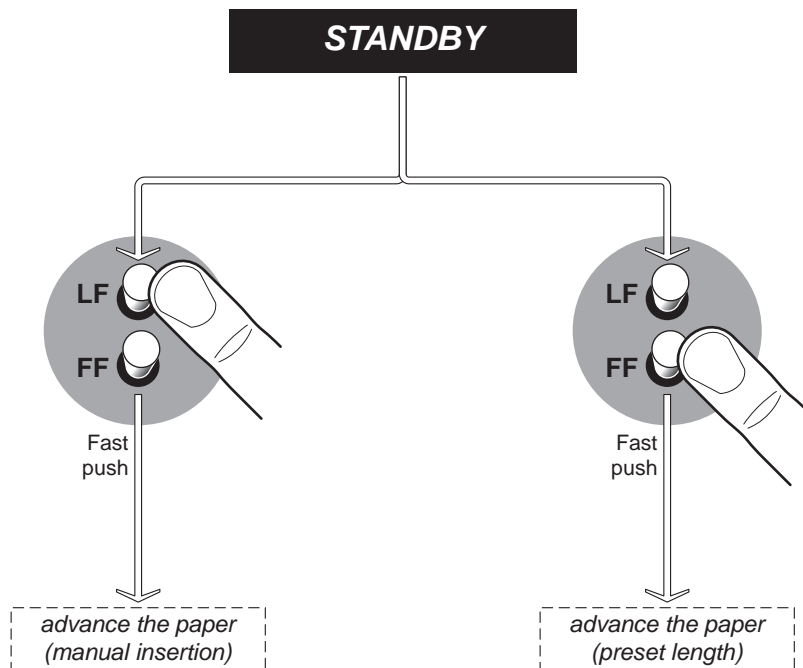
2.4 Status led flashes

The Status led indicates hardware status of device. Given in the table below are the various led signals and the corresponding printer status.

STATUS LED			DESCRIPTION
-	○	*OFF*	PRINTER OFF
GREEN	●	*ON*	PRINTER ON: NO ERROR
GREEN COMMUNICATION STATUS	☀	*1 x*	RECEIVE DATA
		2 x	RECEPTION ERRORS (PARITY, FRAME ERROR, OVERRUN ERROR)
		3 x	COMMAND NOT RECOGNIZED
		4 x	COMMAND RECEPTION TIME OUT
YELLOW RECOVERABLE ERROR	☀	*2 x*	HEADING OVER TEMPERATURE
		3 x	PAPER END
		4 x	PAPER JAM
		5 x	POWER SUPPLY VOLTAGE INCORRECT
		6 x	COVER OPEN
RED UNRECOVERABLE ERROR	☀	*3 x*	RAM ERROR
		4 x	EXTERNAL FLASH ERROR
		5 x	CUTTER ERROR

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3   INSTALLATION

3.1   Paper reduction guides kit (200dpi models)

The printer includes a kit for the reduction of paper width up to 45mm. The kit includes the reductions for both the left paper guide and the right paper guide.

With both the guides assembled, do not go below 45mm wide paper: below this value, the sensor the sensor can not detect the paper presence.
To assemble the reductions refer to the following figure.

minimum paper width 45mm
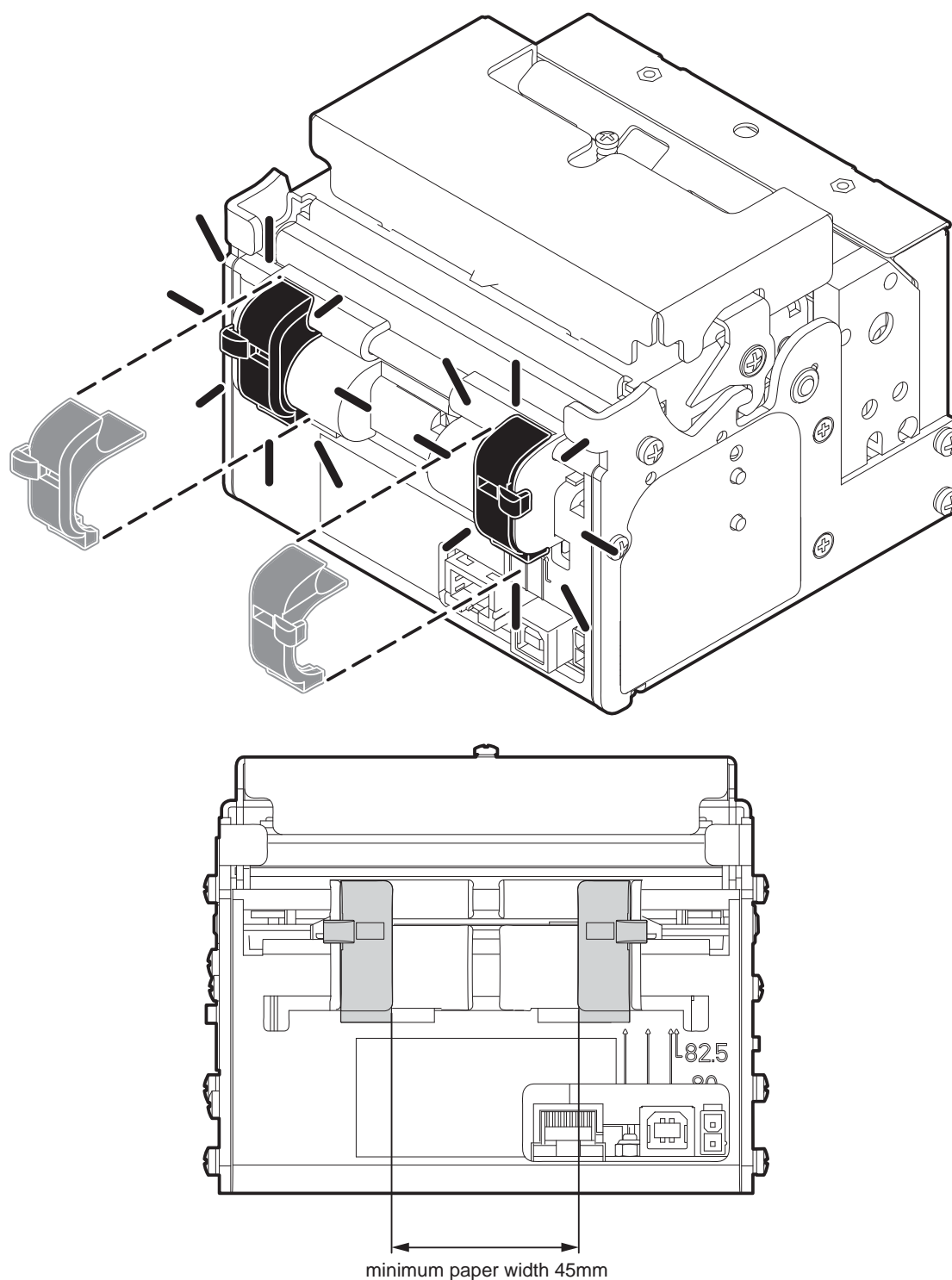
The following figure shows the dimensions of the printer with the left paper guide reduction.
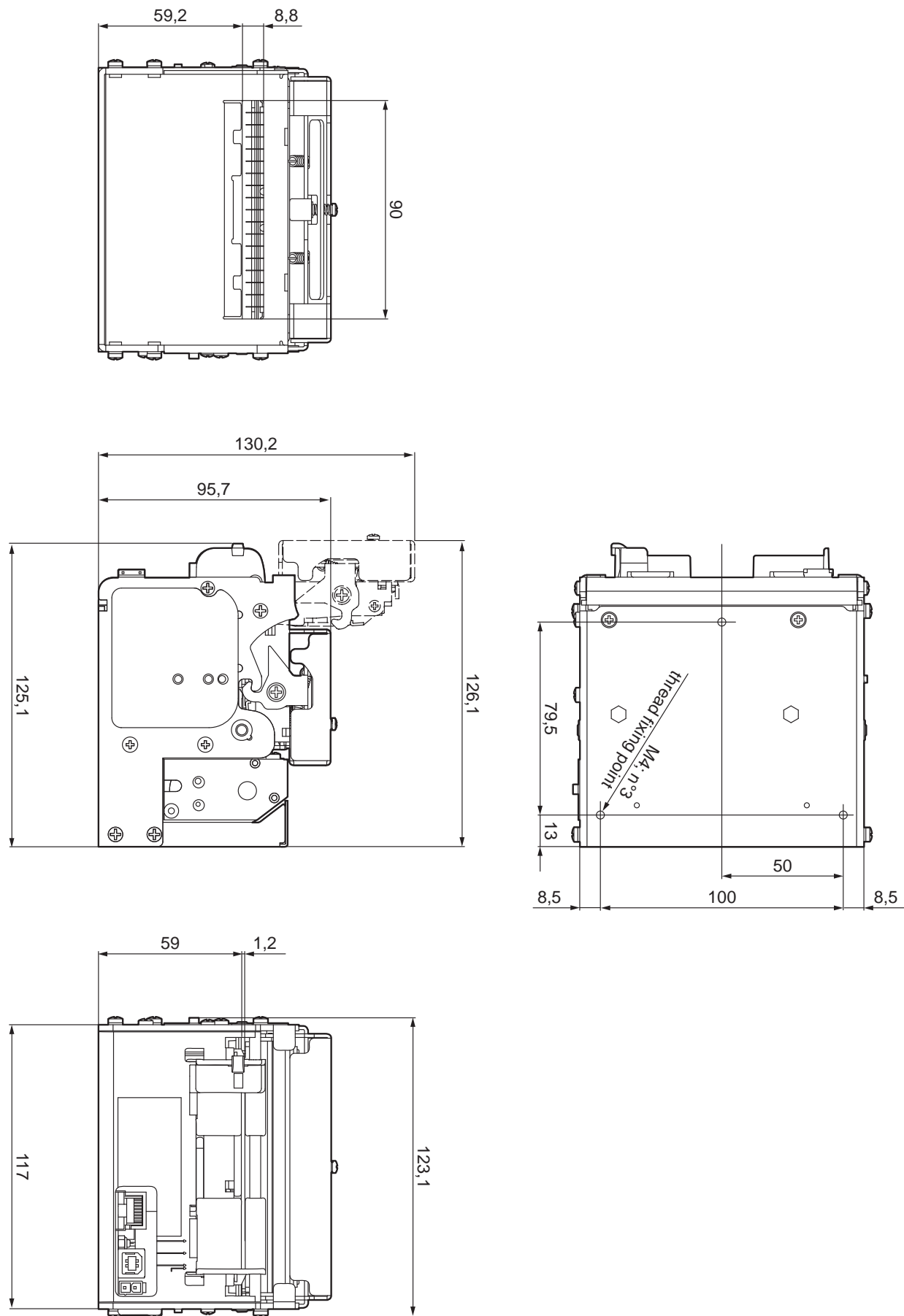
3.2   Fastening

For the correct operation of the printer and allow the fall of tickets printed, the machine must be installed with a minimum downward slope of 45°, as shown in following figure.
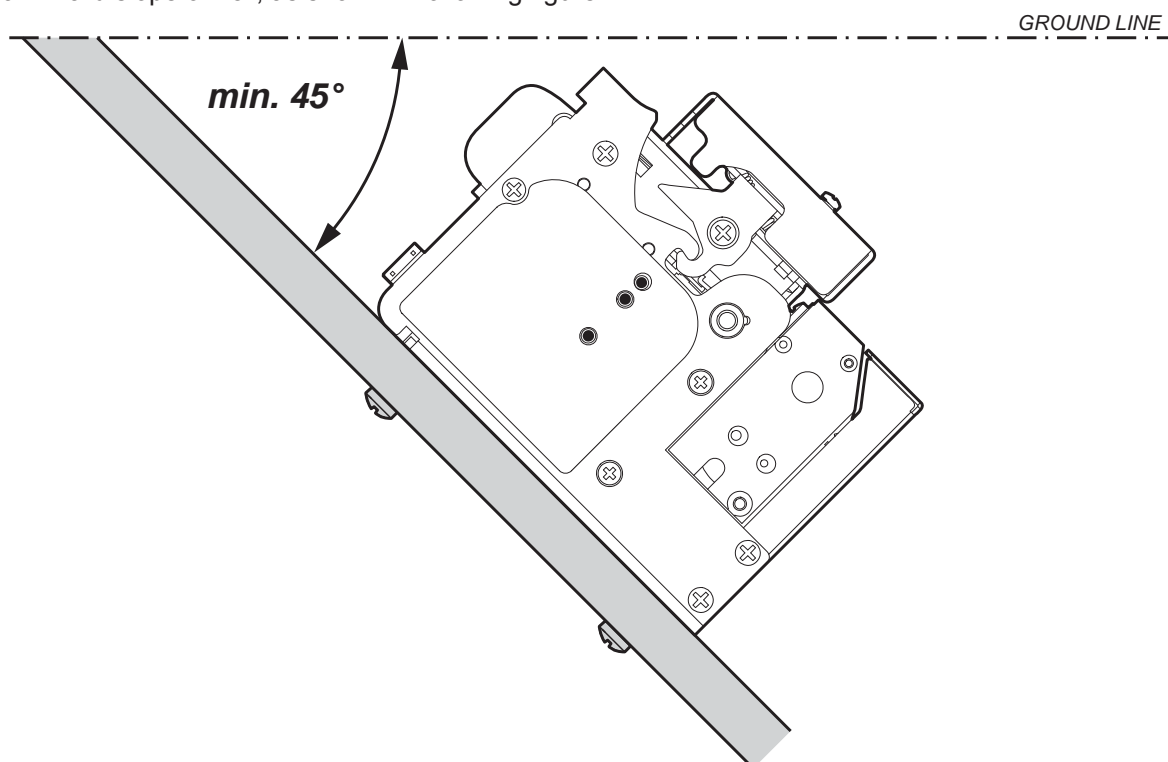
The printer is provided with three fixing holes on the bottom of device (see following figure). To fasten the printer on a panel, use three M4 screws
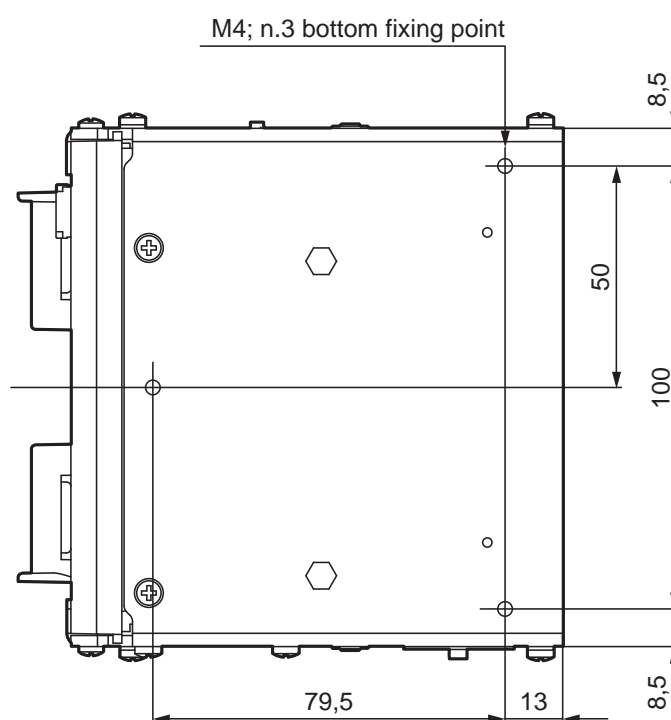
It's very important to consider the screws length to not damage the internal components placed near the fixing holes (see following figure).

control board
printer chassis

max 8

Sp

fixing panel

fixing screw
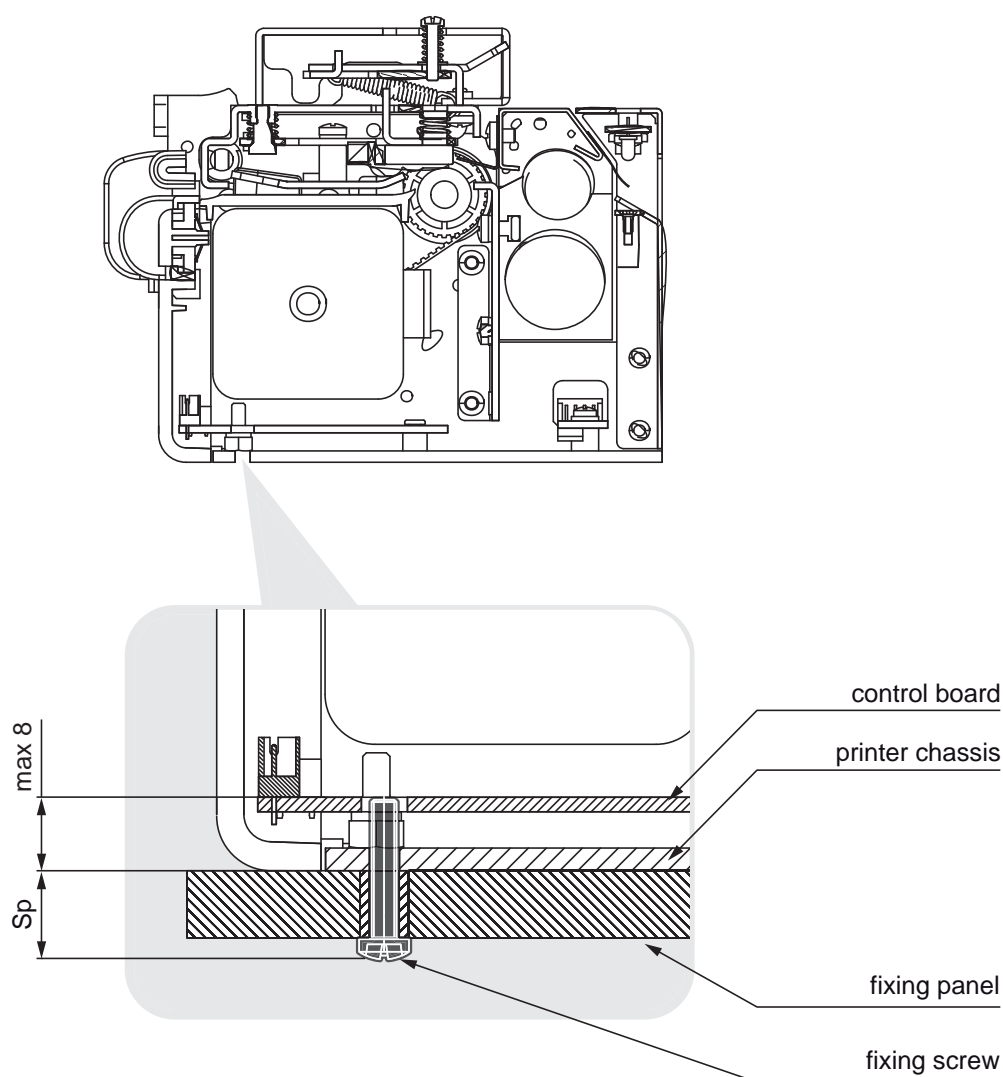
The screw length (L) will be calculated according to the thickness of the panel (Sp) on which the printer is fixed, as follows

$$L \leq 8 \text{ mm} + Sp$$

For example, if panel thickness is 10mm (Sp = 10mm) the max screw length will be 18mm.

3.3   Connections

The following figures show the pollible connections for device.

200dpi model with rear connectors
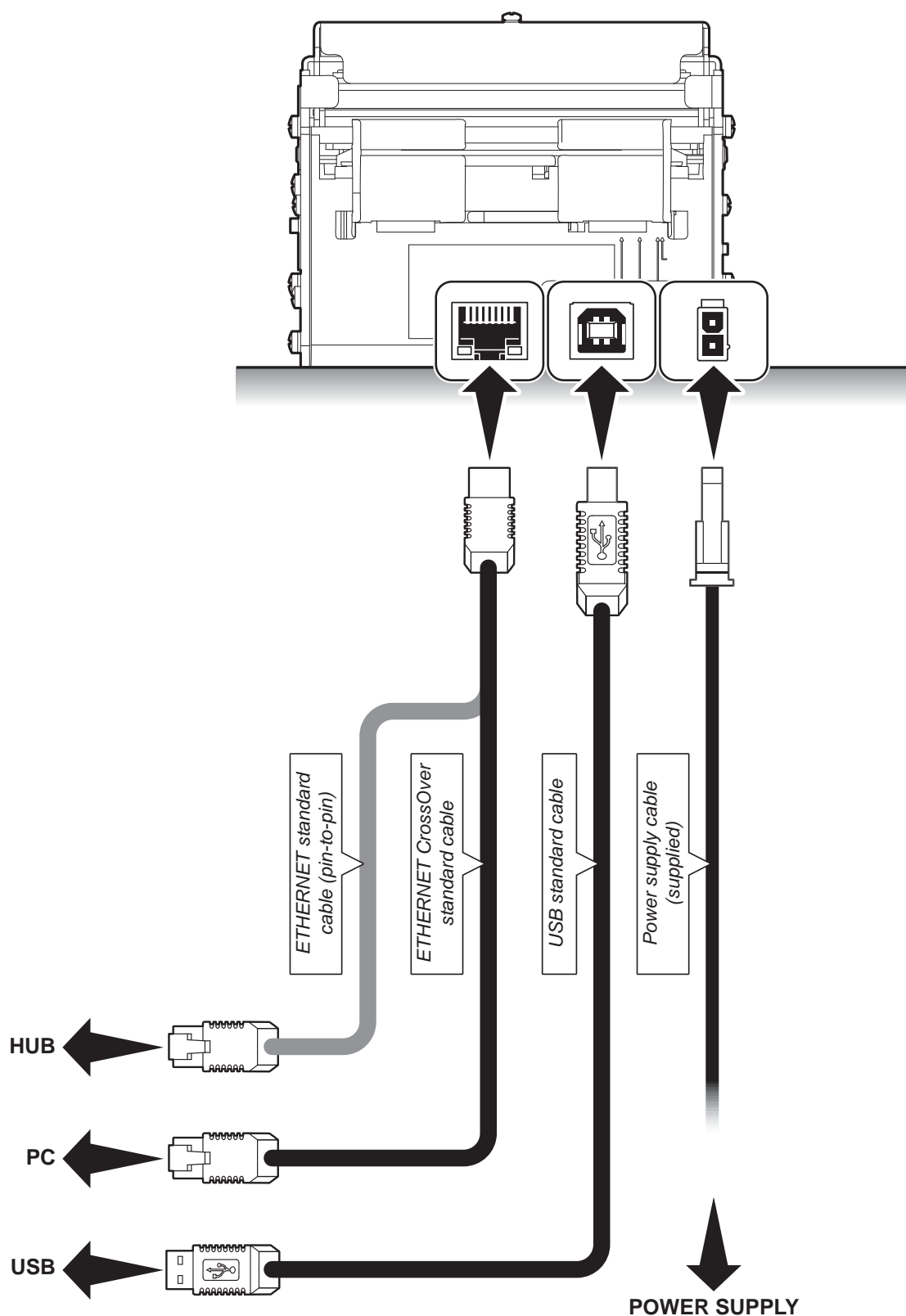
ETHERNET standard cable (pin-to-pin)

ETHERNET CrossOver standard cable

USB standard cable

Power supply cable (supplied)

HUB

PC

USB

POWER SUPPLY

ATTENTION:
In some using conditions, we recommend the installation of a ferrite core on the power supply cable.

200dpi model with laterals connectors
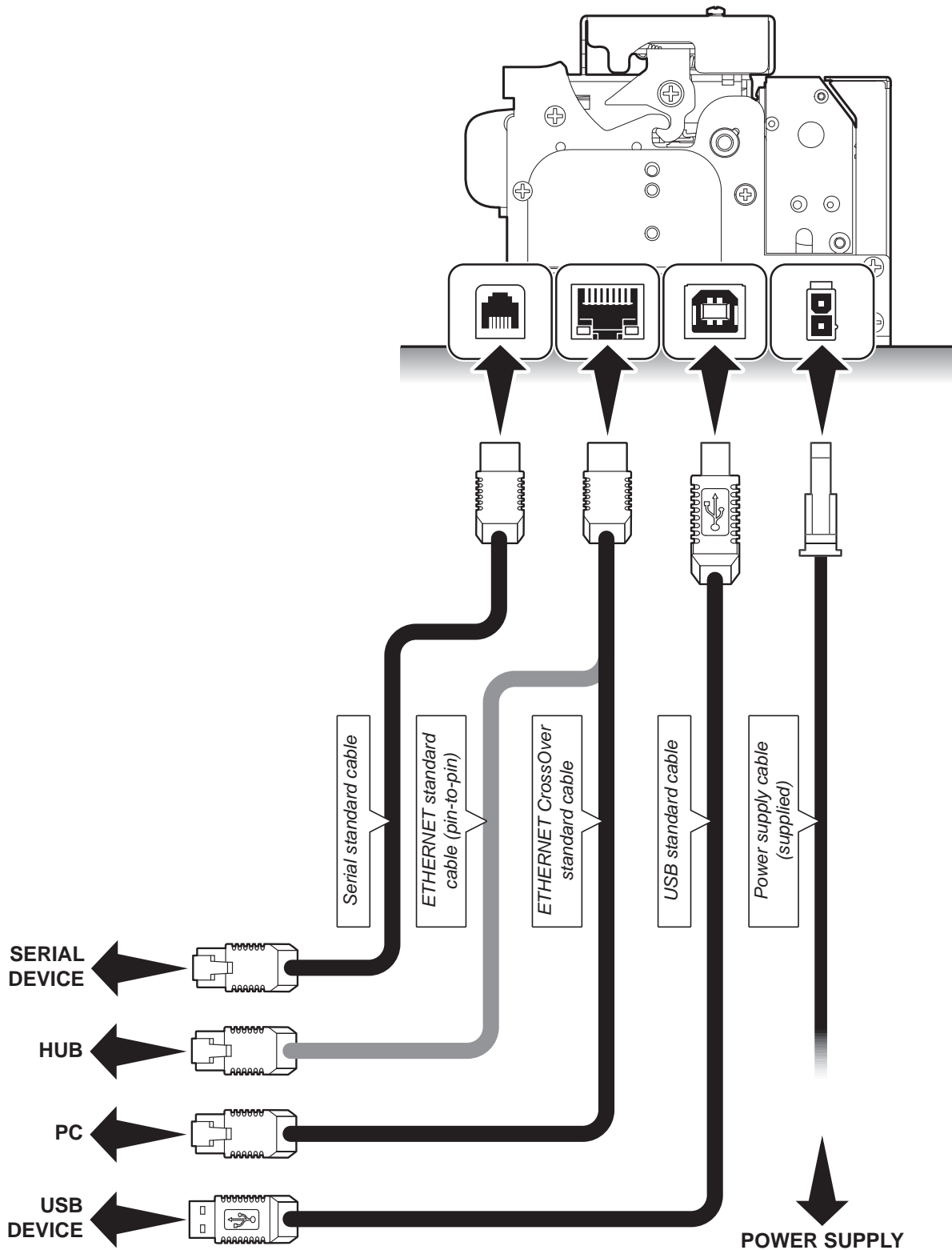
Serial standard cable

ETHERNET standard cable (pin-to-pin)

ETHERNET CrossOver standard cable

USB standard cable

Power supply cable (supplied)

SERIAL DEVICE

HUB

PC

USB DEVICE

POWER SUPPLY

ATTENTION:
 In some using conditions, we recommend the installation of a ferrite core on the power supply cable.

NOTE: If RS232 and USB connectors are inserted, communication port is USB.

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300dpi model

Serial standard cable

ETHERNET standard cable (pin-to-pin)

ETHERNET CrossOver standard cable

USB standard cable

Power supply cable (supplied)

SERIAL DEVICE

HUB

PC

USB DEVICE
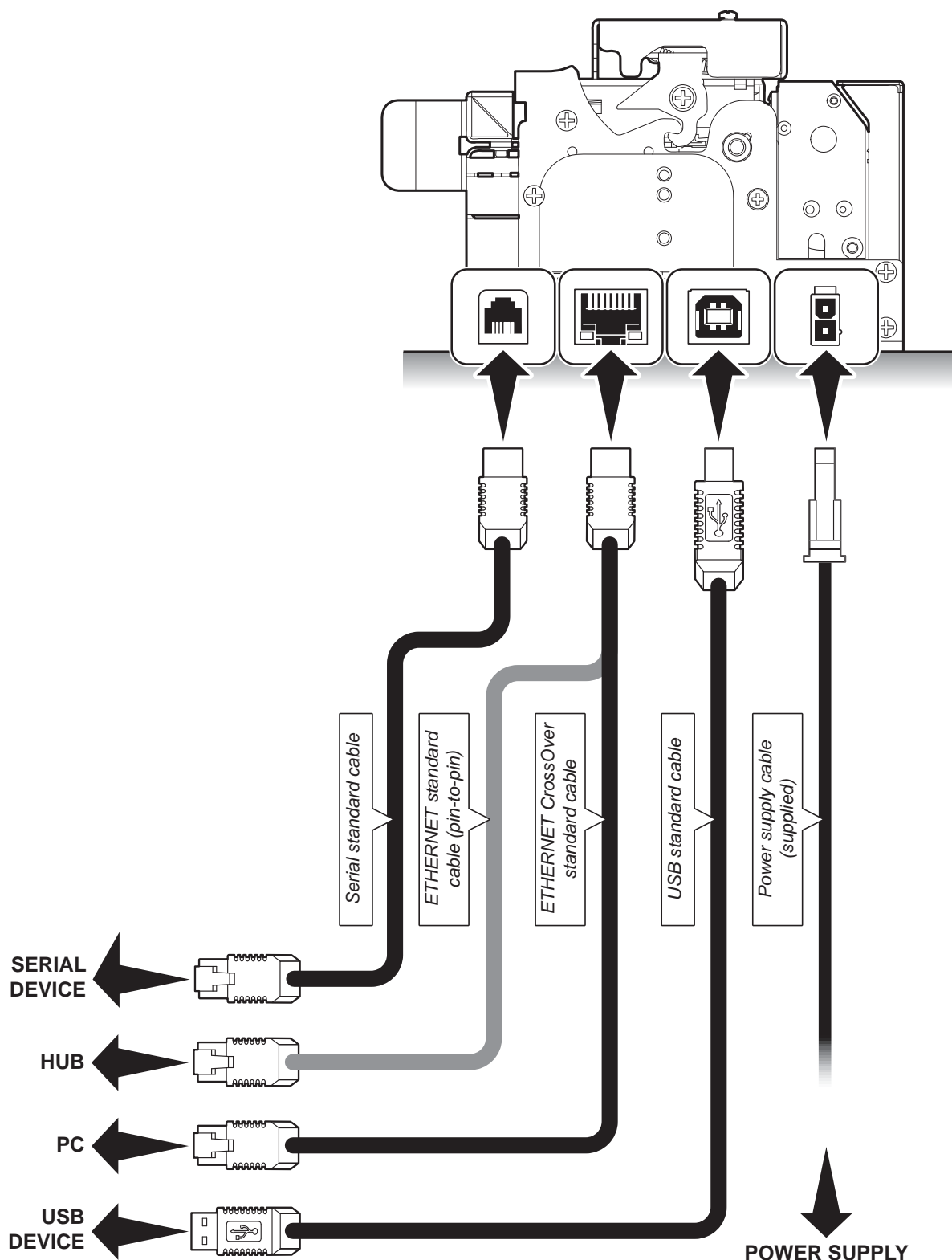
POWER SUPPLY

ATTENTION:
In some using conditions, we recommend the installation of a ferrite core on the power supply cable.

NOTE: If RS232 and USB connectors are inserted, communication port is USB.
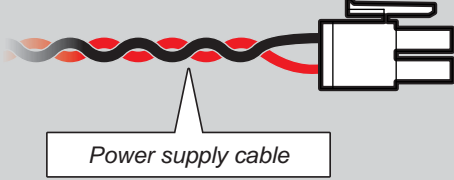
3.4 Pinout

POWER SUPPLY
Male Molex connector series 5569 vertical (no. 39-30-1020)

J9	1	+24 Vdc
	2	GND

ATTENTION:
Respect power supply polarity.

NOTE: *Power supply cable*
The following figure shows the connector pinout of the power supply cable for the device:

Power supply cable

Female Molex connector series 5557 (n.39-01-3022)

PIN	Cable color	Signal
1	Red	+24V
2	Black	GND
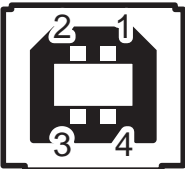
USB INTERFACE
Female USB type B connector

J7	1	USB-PLUG	(in)
	2	PD -0	(in/out)
	3	PD +0	(in/out)
	4	GND	
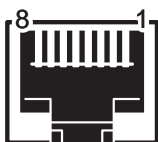
ETHERNET INTERFACE
RJ45 female connector
(200dpi models)

J15		
	1	TPOUT+
	2	TPOUT-
	3	TPIN+
	4	GND
	5	GND
	6	TPIN-
	7	n.c
	8	n.c
	9 (*)	+3,3 V
	10 (*)	LED-LAN
	11 (*)	+3,3 V
	12 (*)	LED-LNK
	13 (*)	GND
	14 (*)	GND

NOTE:
The functionality of two led are specified in the following table:

LED	FUNCTION
LED-LNK	Link (yellow color): the led lights up when a connection is active
LED-LAN	Rx/Tx: (green color): the led lights up when occurs a data reception or transmission

• To directly connect the printer to a Personal Computer, use a Cross-Over Ethernet cable.

• To connect the printer to a hub device, use an UTP Ethernet cable (Pin to Pin).

NOTE:
(*): The pinout shown in table represents the input signals to component J15 before the isolation voltage transformer.
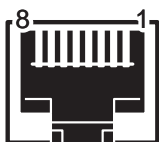
ETHERNET INTERFACE
RJ45 female connector
(300dpi models)

J15	1	RX+1
	2	+3,3VETH
	3	RX-1
	4	TX+1
	5	+3,3VETH
	6	TX-1
	7	n.c
	8	GND
	9 (*)	+3,3 V
	10 (*)	LED-LNK
	11 (*)	+3,3 V
	12 (*)	LED-LAN
	13 (*)	GND
	14 (*)	GND

NOTE:
The functionality of two led are specified in the following table:

• For 10Base-T connection:

LED	FUNCTION
LED-LNK	Link (yellow color): the led light on when a connection is active
LED-LAN	Rx/Tx (green color): the led light on when occurs a data reception or transmission

• For 10/100Base-TX connection:

LED	FUNCTION
LED-LNK	The led light (yellow color) on when a connection is active and flashes wnen occurs a data reception or transmission
LED-LAN	The led light (green color) on when occurs a 100Mbit connection and off when occurs a 10Mbit connection

NOTE:
The printer automatically recognizes the type of connection (cross or pin-to-pin).

NOTE:
(*): The pinout shown in table represents the input signals to component J15 before the isolation voltage transformer.

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SERIAL INTERFACE
RJ11 female connector
(200dpi models with lateral connectors, 300dpi models)

J3		
1	+5VF	
2	GND	
3	RX1	During reception, oscillates between "0" and "1" depending on data
4	TX1	During transmission, oscillates between "0" and "1" depending on data
5	RT1	
6	DT1	

NOTE: Given the presence of the RS232 standard, logic value "0" corresponds to a voltage level of between +3 Vdc and +15 Vdc and logic value "1" corresponds to a voltage level of between -3 Vdc and -15 Vdc.

NOTE: *DEVICE > PC connection*
The following pictures show an example of connections between the printer and a personal computer using a 9 pin female serial connector:

RJ11 — DB9

1 —
2 GND
3 RXD
4 TXD
5 RTS
6 DTR

DEVICE ⟷ PC
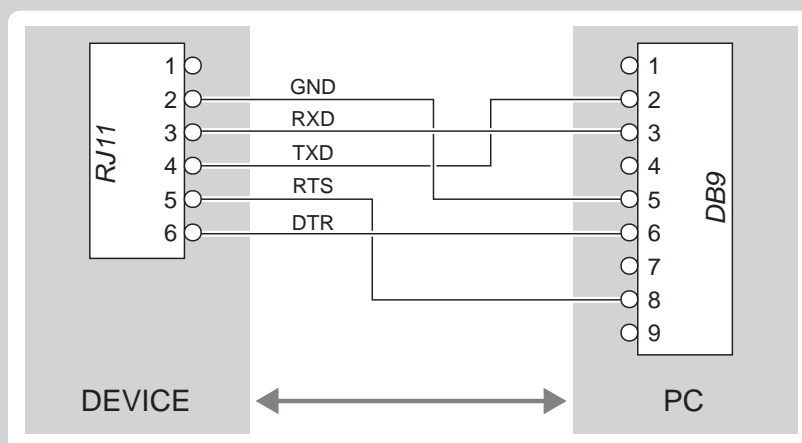
NOTE: When use a serial cable, we recommend the installation of a ferrite core on the serial cable.

3.5   Driver

The drivers are available for the following operating system:

OPERATING SYSTEM	DRIVER	INSTALLATION PROCEDURE
Windows	Windows XP	From the START menu, press Enter and key-in the path where the SW was saved on your PC, then click OK. Follow the instructions that appear on the screen to install the driver.
	Windows VISTA (32/64bit)	
	Windows 7 (32/64bit)	
	Windows 8 (32/64bit)	
	OPOS	
Linux	Linux (32/64bit)	Follow the instruction get back on the README.TXT file you can find it in the software package downloaded in advance.

All drivers can be found in the DOWNLOAD section of the web site www.custom.biz.

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4   OPERATION

4.1   Adjusting paper width

200dpi models

Paper width may be adjusted from 60mm to 82.5mm using the right and left slides located at the paper infeed opening. Below the right slide there are four point of reference for paper width (60, 70, 80 and 82.5mm). To choose one of this value for paper width, move the slides to align the internal side of the fin (A) with the point of reference (see following figure).
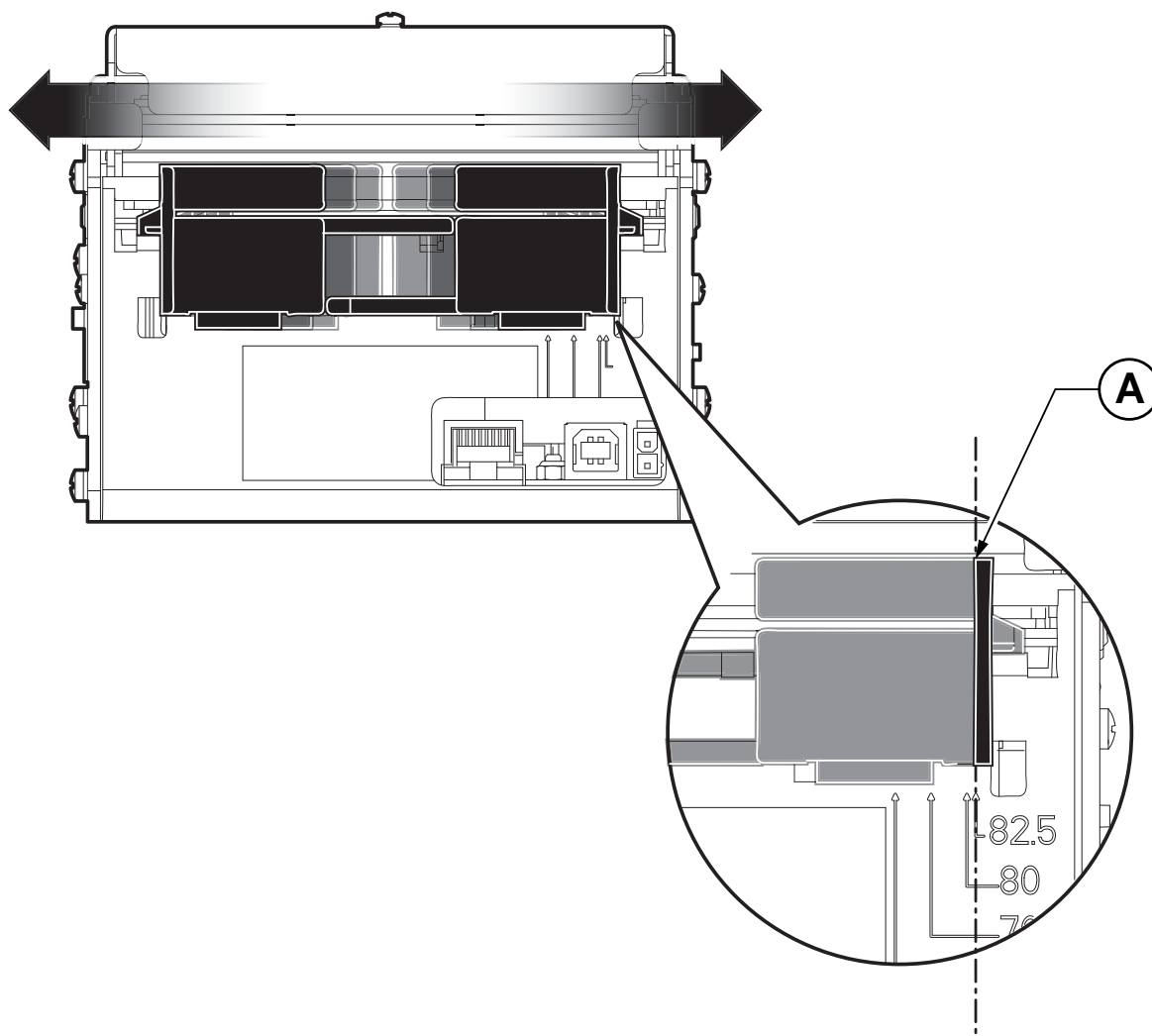
The printer includes a kit for paper width reducing. The kit allows the use of paper widths up to 45mm.
For more details, see paragraph 3.1 of this manual.

300dpi models

Paper width may be adjusted on 60mm or on 82.5mm. To adjust the paper width, unscreew the fixing screws fot the paper cursors and assemble them into the holes in the outer (A) to use 86mm paper width or into the inner holes (B) to use 60mm paper width (see following figure).
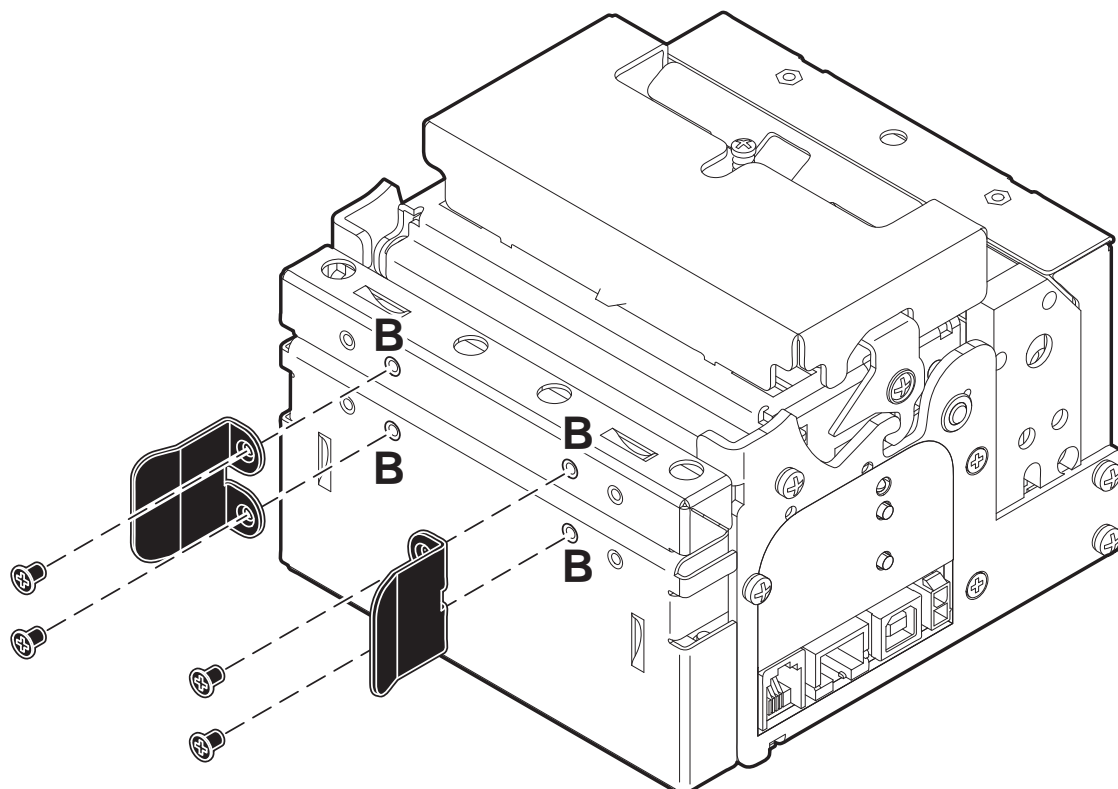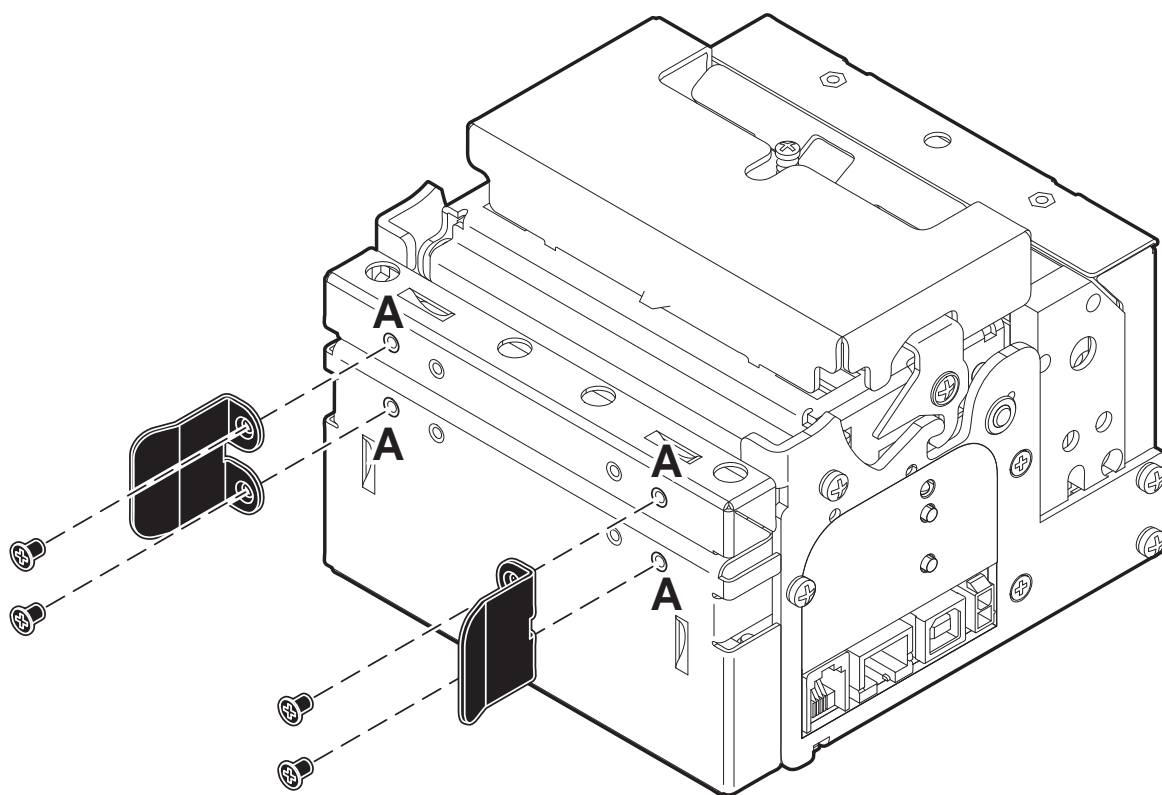
4.2   Paper roll insertion

At every change of paper roll, check inside the printer. To change the paper roll, proceed as follows:

1
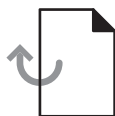
SEE PREVIOUS PARAGRAPHS

Adjust the paper width

3

ATTENTION:
Make sure the cut is straight.
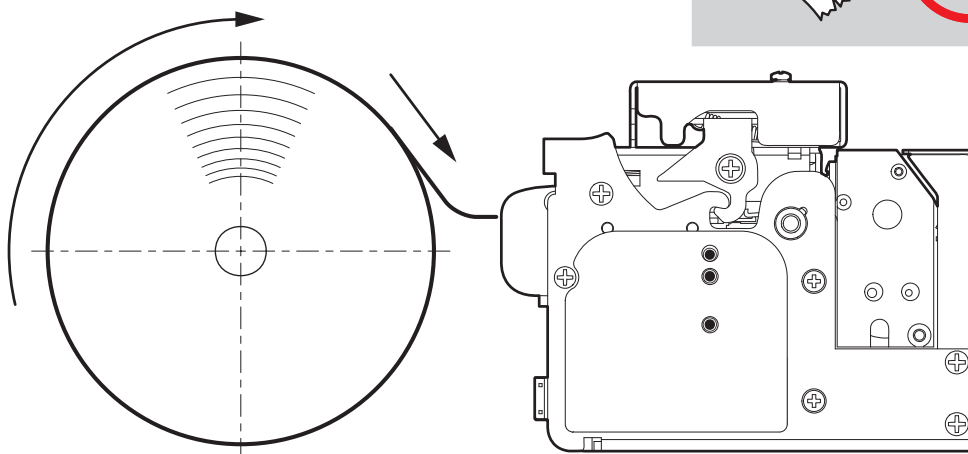
Position the paper roll,
so that it unrolls correctly as shown in figure

3
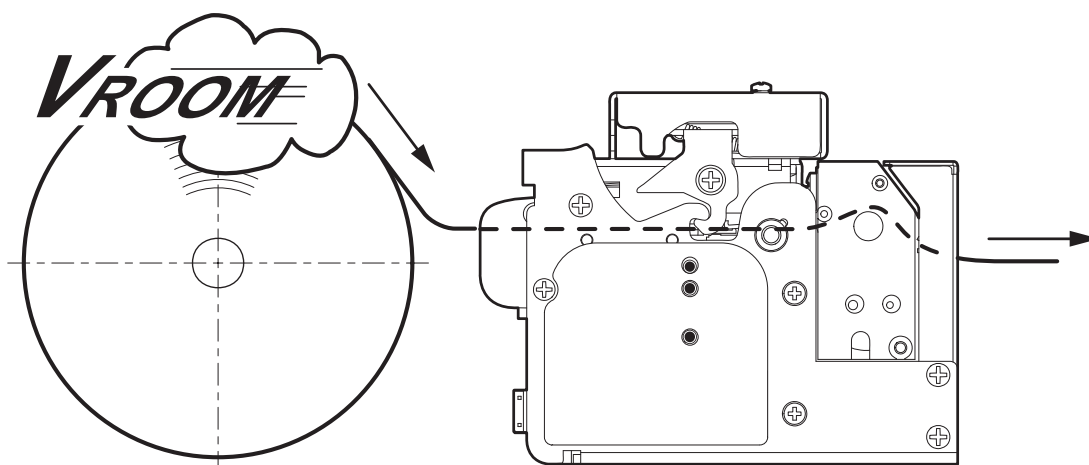
Insert the paper into the paper infeed opening and wait for it to load automatically.

The following figure gives the limit positions of the paper roll related to the printer for a correct paper loading without a paper roll holder support.
The direction of the paper will always form a maximum angle of 90 ° or -90 ° with the insertion plane of paper inside the printer.

90°

-90°
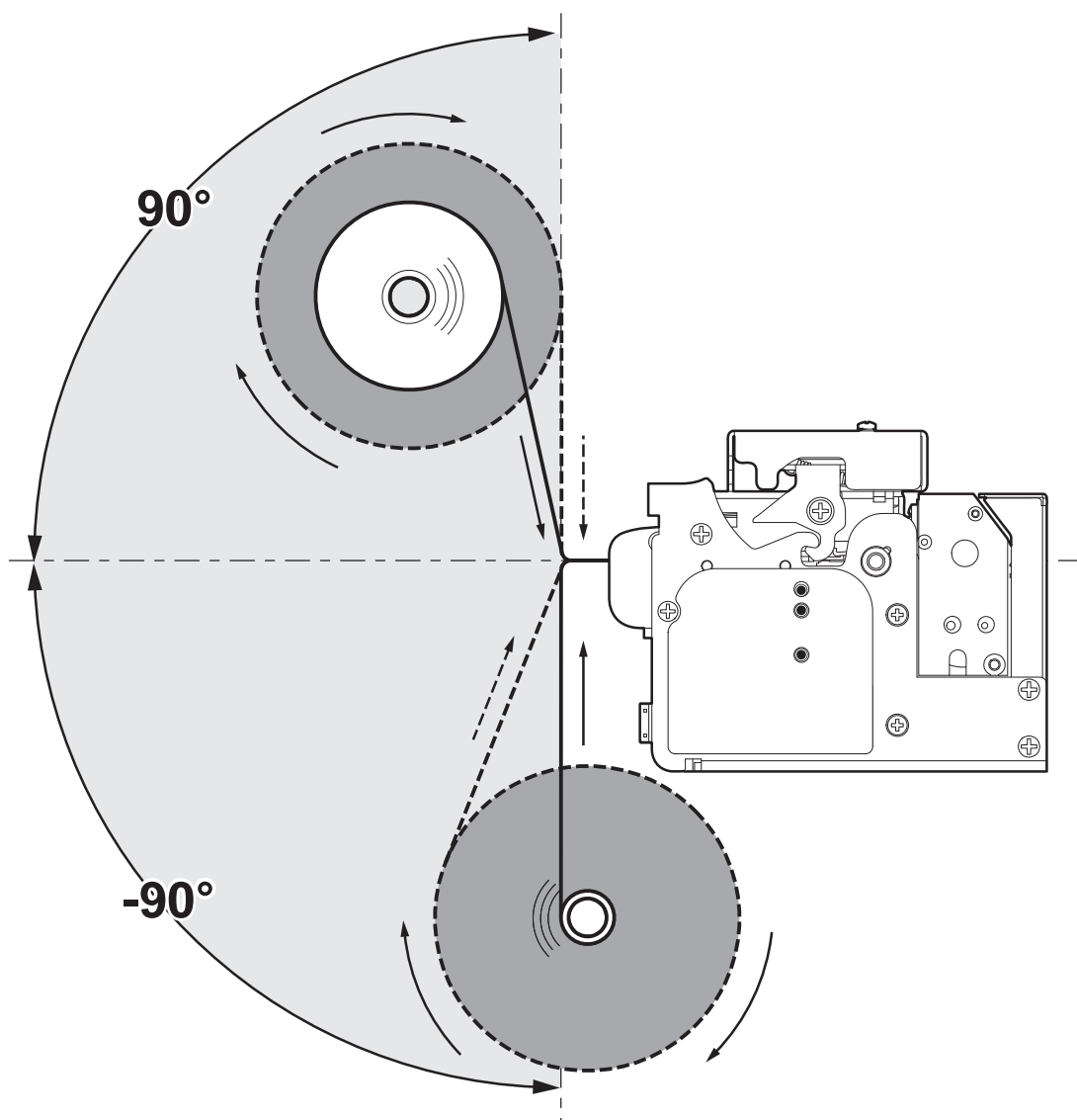
5   CONFIGURATION

5.1   Configuration mode

To enter the configuration mode and print a SETUP report with the operating parameters of the printer, proceed as follows.

1

200dpi model with lateral connector, 300dpi model

LF
FF

LINE FEED KEY
(hold down)

+

POWER SUPPLY

200dpi model with rear connector

LF
FF

LINE FEED KEY
(hold down)

+
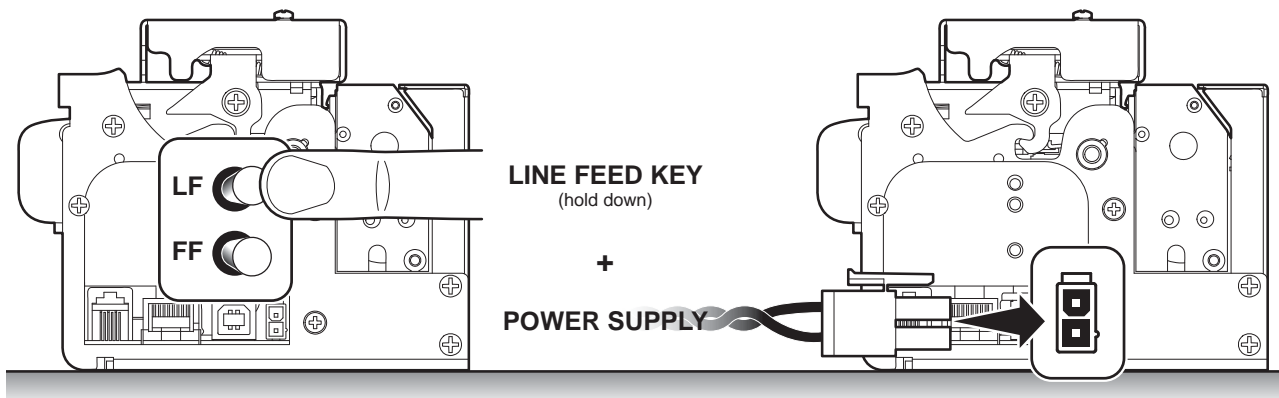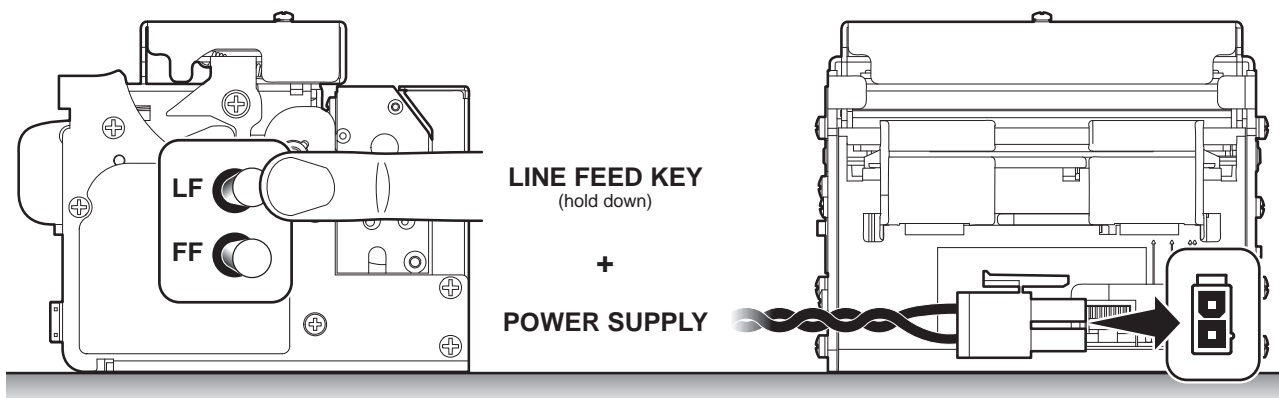
POWER SUPPLY

During power-up, hold down the LINE FEED key
while the wiring is plugged into the power supply connector of the printer.

2
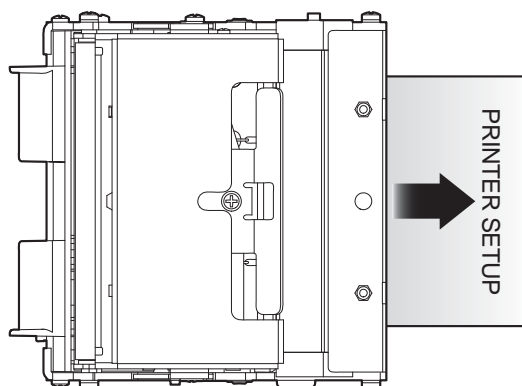
PRINTER SETUP

The device prints a SETUP report.

3

LF
FF
TASTO FORM FEED
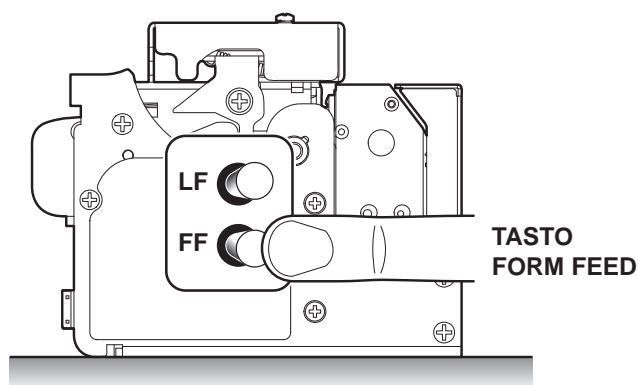
Press the LINE FEED key to enter the configuration mode

4
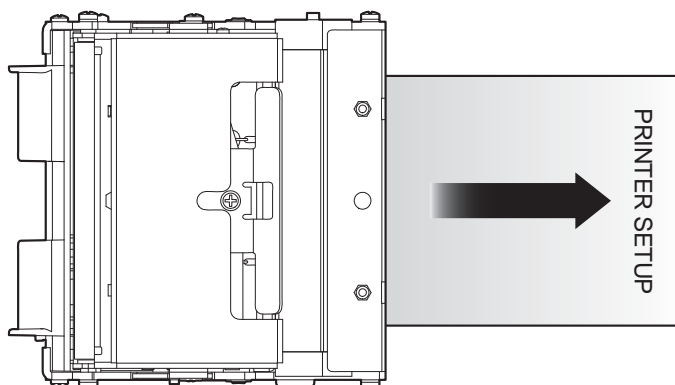
PRINTER SETUP

Proceed with the configuration by using the keys according the functions printed on paper (see par.2.3).
For description and values of setup parameters, see the following paragraphs.

NOTE:
During power-up, if the LINE FEED key is held down, the printer enters the auto-test routine and prints out the setup report. The printer will remain in standby in Hexadecimal dump mode (see following paragraphs) until another key is pressed or characters are received through the printer communication port.
When the FORM FEED key is pressed, the printer enters parameter configuration.
When the LINE FEED key is pressed, the printer exits setup and terminates the Hexadecimal dump function.

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5.2 Setup report

The following figure shows the setup report of the printer. The shown values for parameters are sample values; for the list and the description of printer parameters see the following paragraphs.

200dpi models

PRINTER NAME and
FIRMWARE RELEASE {

> VK80   -   rel 1.00

PRINTER SETUP

DEVICE
STATUS {

INTERFACE ....USB
PROGRAM MEMORY TEST..........OK
DYNAMIC RAM TEST....................OK
EEPROM TEST.............................OK
CUTTER TEST..............................OK
HEAD VOLTAGE [V]   = 23,76
HEAD TEMPERATURE [°C]   = 30
PAPER PRINTED [cm]   = 69525
CUT COUNTER   = 3520
POWER ON COUNTER   = 438
PRINTING HEAD TYPE   = *<type>*
SERIAL NUMBER   = *<serial>*

ETHERNET
PARAMETERS {

IP Address........................... : **192. 168.   0.   1**
Subnet Mask .... : **255. 255. 240.   0**
Default Gateway................. : **192. 168.   0.   1**

MAC Address .... : **00-0E-E2-00-00-00**

For advanced printer setup please
connect to: **http://192.168.0.1**

PRINTER
PARAMETERS {

RS232 Baud Rate ....: **19200 bps**
RS232 Data Length ....: **8 bits/chr**
RS232 Parity ....: **None**
RS232 Handshaking ....: **Xon/Xoff**
Busy Condition ....: **RxFull**
USB Address Number ....: **0**
Autofeed ....: **CR Disabled**
Print Mode ....: **Normal**
Chars / inch ....: **A=15 B=20 cpi**
Speed / Quality..........................: **Normal**
Notch Alignment ....: **Disabled**
Current ....: **Normal**
Print Density..............................: **0%**

KEYS FUNCTIONS {

[FF]   *key to enter setup*
[LF]   *key to skip setup*

300dpi models

PRINTER NAME and
FIRMWARE RELEASE

VK80 300dpi -   rel 1.00

PRINTER SETUP

DEVICE
STATUS

INTERFACE ....USB
PROGRAM MEMORY TEST..........OK
DYNAMIC RAM TEST....................OK
EEPROM TEST.............................OK
CUTTER TEST..............................OK
HEAD VOLTAGE [V]   = 23,76
HEAD TEMPERATURE [°C]   = 30
PAPER PRINTED [cm]   = 69525
CUT COUNTER   = 3520
POWER ON COUNTER   = 438
PRINTING HEAD TYPE   = *<type>*

ETHERNET
PARAMETERS

IP Address........................... : **192. 168.   0.   1**
Subnet Mask .... : **255. 255. 240.   0**
Default Gateway.................. : **192. 168.   0.   1**

MAC Address .... : **00-0E-E2-00-00-00**

For advanced printer setup please
connect to: **http://192.168.0.1**

PRINTER
PARAMETERS

RS232 Baud Rate ....: **19200 bps**
RS232 Data Length ....: **8 bits/chr**
RS232 Parity ....: **None**
RS232 Handshaking ....: **Xon/Xoff**
Busy Condition ....: **RxFull**
USB Address Number ....: **0**
Autofeed ....: **CR Disabled**
Print Mode ....: **Normal**
Chars / inch ....: **A=15 B=20 cpi**
Speed / Quality..........................: **Normal**
Notch Alignment ....: **Disabled**
Chinese Font ....: **Disabled**
Printing Width ....: **55mm**
Print Density..............................: **0%**

KEYS FUNCTIONS

[FF] *key to enter setup*
[LF] *key to skip setup*

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5.3   Printer status

Printer operating status is indicated in the configuration print-out in which, next to the name of the components displayed, the following information is given:

INTERFACE	*is given the interface present*
PROGRAM MEMORY TEST	*the message OK appears if functioning and NOT OK if faulty.*
DYNAMIC RAM TEST	*the message OK appears if functioning and NOT OK if faulty.*
EEPROM TEST	*the message OK appears if functioning and NOT OK if faulty.*
CUTTER TEST	*the message OK appears if functioning and NOT OK if faulty.*
HEAD VOLTAGE	*is given the voltage of the head.*
HEAD TEMPERATURE	*is given the temperature of the head.*
PAPER PRINTED	*is given the number of centimetres of paper printed.*
CUT COUNTER	*is given the number of cuts made.*
POWER ON COUNTER	*is given the number of power-ups made*
PRINTING HEAD TYPE	*is given the printing head model*
SERIAL NUMBER *	*is given the serial number of the device*

NOTE:
(*) : only for 200dpi models.

5.4 Printer parameters (200dpi models)

This printer allows the configuration of the parameters listed in the following table.
The parameters marked with the symbol [D] are the default values.
Settings remain active even after the printer has been turned off and they are stored in non-volatile memory.

> **ATTENTION:**
> **Any changes to network parameters will interrupt browser connection. If the server not responding you must reconnect to the new IP address set.**

IP ADDRESS	*IP address of printer; this parameter is assigned by the network administrator.*
	NOTE: Press the FORM FEED key to modify the value of the highlighted digit. Pressing LINE FEED key to move the cursor on the next digit (if the cursor is on the latest digit, proceed to next parameter by pressing the LINE FEED key).
SUBNET MASK	*This parameter identifies the local network address.*
	NOTE: Press the FORM FEED key to modify the value of the highlighted digit. Pressing LINE FEED key to move the cursor on the next digit (if the cursor is on the latest digit, proceed to next parameter by pressing the LINE FEED key).
DEFAULT GATEWAY	*This parameter identifies the Gateway IP address used to send applications to the external network.*
	NOTE: Press the FORM FEED key to modify the value of the highlighted digit. Pressing LINE FEED key to move the cursor on the next digit (if the cursor is on the latest digit, proceed to next parameter by pressing the LINE FEED key).
MAC ADDRESS	*This is the number, provided by the constructor, that identifies the printer; this number is univocal.*
	NOTE: This parameter can't be modified by set up.
RS232 BAUD RATE	*Communication speed of the serial interface:* *115200* [D] *19200* [D] *2400* *57600* *9600* *1200* *38400* *4800*
	NOTE: Parameter valid only with serial interface.
RS232 DATA LENGTH	*Number of bit used for characters encoding:* *7 bits/car* *8 bits/car* [D]
	NOTE: Parameter valid only with serial interface.
RS232 PARITY	*Bit for the parity control of the serial interface:* *None* [D] *= parity bit omitted* *Even = even value for parity bit* *Odd = odd value for parity bit*
	NOTE: Parameter valid only with serial interface.

RS232 HANDSHAKING	*Handshaking:*
	XON/XOFF = software handshaking *Hardware ^{D} = hardware handshaking (CTS/RTS)*
	NOTE: Parameter valid only with serial interface. **NOTE:** When the receive buffer is full, if handshaking is set to XON/XOFF, the printer sends the XOFF ($13) on the serial port. When the receive buffer has cleared once again, if handshaking is set to XON/XOFF, the printer sends the XON ($11) on the serial port.
BUSY CONDITION	*Activation mode for Busy signal:*
	OffLine/ RXFull = Busy signal is activated when the printer is both in OffLine status *and the buffer is full* *RXFull ^{D} = Busy signal is activated when the buffer is full*
	NOTE: Parameter valid only with serial interface. Using this parameter, it is possible to select whether the Busy signal is activated when the printer is both in Off Line status and the buffer is full or only if the reception buffer is full.
USB ADDRESS NUMBER	*Numerical address code for the univocal identification of the USB device (in case of more than a USB device connected with the same PC):*
	0 ^{D} 2 4 6 8 *1 3 5 7 9*
AUTOFEED	*Setting of the Carriage Return character:*
	CR disabled ^{D} =Carriage Return disabled *CR enabled = Carriage Return enabled*
PRINT MODE	*Printing mode:*
	Normal ^{D} = enables printing in normal writing way *Reverse = enables printing rotated 180 degrees*
CHARS / INCH	*Font selection:*
	A = 11 cpi, B = 15 cpi *A = 15 cpi, B = 20 cpi ^{D}*
	NOTA: CPI = Characters Per Inch
SPEED / QUALITY	*Setting of printing speed and printing quality:*
	High Quality *Normal ^{D}* *High Speed* *Very High Speed*
NOTCH ALIGNMENT	*Alignment management:*
	Disabled ^{D} = the notch alignment is not performed *Enabled = the notch alignment is performed*
NOTCH THRESHOLD	*Threshold value for the recognition of the presence of notch by the notch sensor:*
	0.33V ^{D} 0.99V 1.65V 2.31V 2.97V *0.66V 1.32V 1.98V 2.64V*
	NOTE: If the "Notch Alignment" parameter is disabled, this parameter is not printed.

NOTCH DISTANCE	*"Notch Distance" is the minimum distance (in mm) between the upper edge of ticket and the notch.*
	The numeric value of the distance is made up with the following three parameters for the setting of two digits for the tens and the units and of the sign:

NOTCH DISTANCE SIGN	*Sign setting:*
	$+^D$ = *positive distance* - = *negative distance*

NOTCH DISTANCE [mm x 10]	*Setting the digit for tens:*
	0^D 2 4 6 8 1 3 5 7 9

NOTCH DISTANCE [mm x 1]	*Setting the digit for units:*
	0^D 2 4 6 8 1 3 5 7 9

NOTE: For example, to set the notch distance to 15 mm, modify the parameters as follows:
> *Notch Distance Sign   = +*
> *Notch Distance [mm x 10] = 1*
> *Notch Distance [mm x 1] = 5*

NOTE: If the "Notch Alignment" parameter is disabled, the parameters for the "Notch Distance" are not printed.

NOTE: In Setup mode, it is possible to set the notch distance using a values range from -5 mm to 32 mm.

CURRENT	*Setting of the current consumption:*
	Low *High* *Normal ^{D}*

PRINT DENSITY	*Adjusting the printing density:*
	-50% -12% +25% *-37% 0 ^{D} +37%* *-25% +12% +50%*

5.5   Printer parameters (300dpi models)

This printer allows the configuration of the parameters listed in the following table.
The parameters marked with the symbol [D] are the default values.
Settings remain active even after the printer has been turned off and they are stored in non-volatile memory.

ATTENTION:
Any changes to network parameters will interrupt browser connection. If the server not responding you must reconnect to the new IP address set.

IP ADDRESS	*IP address of printer; this parameter is assigned by the network administrator.*
	NOTE: Press the FORM FEED key to modify the value of the highlighted digit. Pressing LINE FEED key to move the cursor on the next digit (if the cursor is on the latest digit, proceed to next parameter by pressing the LINE FEED key).
SUBNET MASK	*This parameter identifies the local network address.*
	NOTE: Press the FORM FEED key to modify the value of the highlighted digit. Pressing LINE FEED key to move the cursor on the next digit (if the cursor is on the latest digit, proceed to next parameter by pressing the LINE FEED key).
DEFAULT GATEWAY	*This parameter identifies the Gateway IP address used to send applications to the external network.*
	NOTE: Press the FORM FEED key to modify the value of the highlighted digit. Pressing LINE FEED key to move the cursor on the next digit (if the cursor is on the latest digit, proceed to next parameter by pressing the LINE FEED key).
MAC ADDRESS	*This is the number, provided by the constructor, that identifies the printer; this number is univocal.*
	NOTE: This parameter can't be modified by set up.
RS232 BAUD RATE	*Communication speed of the serial interface:* *115200* [D] *19200* [D] *2400* *57600* *9600* *1200* *38400* *4800*
	NOTE: Parameter valid only with serial interface.
RS232 DATA LENGTH	*Number of bit used for characters encoding:* *7 bits/car* *8 bits/car* [D]
	NOTE: Parameter valid only with serial interface.
RS232 PARITY	*Bit for the parity control of the serial interface:* *None* [D] = *parity bit omitted* *Even =* *even value for parity bit* *Odd =* *odd value for parity bit*
	NOTE: Parameter valid only with serial interface.

RS232 HANDSHAKING	*Handshaking:*
	XON/XOFF = software handshaking *Hardware ^{D} = hardware handshaking (CTS/RTS)*
	NOTE: Parameter valid only with serial interface. **NOTE:** When the receive buffer is full, if handshaking is set to XON/XOFF, the printer sends the XOFF ($13) on the serial port. When the receive buffer has cleared once again, if handshaking is set to XON/XOFF, the printer sends the XON ($11) on the serial port.
BUSY CONDITION	*Activation mode for Busy signal:*
	OffLine/ RXFull = Busy signal is activated when the printer is both in OffLine status and the buffer is full *RXFull ^{D} = Busy signal is activated when the buffer is full*
	NOTE: Parameter valid only with serial interface. Using this parameter, it is possible to select whether the Busy signal is activated when the printer is both in Off Line status and the buffer is full or only if the reception buffer is full.
USB ADDRESS NUMBER	*Numerical address code for the univocal identification of the USB device (in case of more than a USB device connected with the same PC):*
	0 ^{D} 2 4 6 8 *1 3 5 7 9*
AUTOFEED	*Setting of the Carriage Return character:*
	CR disabled ^{D} =Carriage Return disabled *CR enabled = Carriage Return enabled*
PRINT MODE	*Printing mode:*
	Normal ^{D} = enables printing in normal writing way *Reverse = enables printing rotated 180 degrees*
CHARS / INCH	*Font selection:*
	A = 11 cpi, B = 15 cpi *A = 15 cpi, B = 20 cpi ^{D}*
	NOTA: CPI = Characters Per Inch
SPEED / QUALITY	*Setting of printing speed and printing quality:*
	High Quality *Normal ^{D}* *High Speed* *Very High Speed*
NOTCH ALIGNMENT	*Alignment management:*
	Disabled ^{D} = the notch alignment is not performed *Enabled = the notch alignment is performed*
NOTCH THRESHOLD	*Threshold value for the recognition of the presence of notch by the notch sensor:*
	0.33V ^{D} 0.99V 1.65V 2.31V 2.97V *0.66V 1.32V 1.98V 2.64V*
	NOTE: If the "Notch Alignment" parameter is disabled, this parameter is not printed.

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| **NOTCH DISTANCE** | *"Notch Distance" is the minimum distance (in mm) between the upper edge of ticket and the notch.* |
| | *The numeric value of the distance is made up with the following three parameters for the setting of two digits for the tens and the units and of the sign:* |

		Sign setting:			
NOTCH DISTANCE SIGN		$+^D$ = *positive distance*			
		- = *negative distance*			

		Setting the digit for tens:			
NOTCH DISTANCE [mm x 10]		0^D	*2*	*4*	*6*	*8*
		1	*3*	*5*	*7*	*9*

		Setting the digit for units:			
NOTCH DISTANCE [mm x 1]		0^D	*2*	*4*	*6*	*8*
		1	*3*	*5*	*7*	*9*

> **NOTE:** For example, to set the notch distance to 15 mm, modify the parameters as follows:
>   *Notch Distance Sign*   = +
>   *Notch Distance [mm x 10]* = 1
>   *Notch Distance [mm x 1]*   = 5
> **NOTE:** If the "Notch Alignment" parameter is disabled, the parameters for the "Notch Distance" are not printed.
> **NOTE:** In Setup mode, it is possible to set the notch distance using a values range from -5 mm to 32 mm.

CHINESE FONT	*Printing with the chinese characters set GB18030:*
	Disable ^{D} = *Printing with the chinese characters is not performed*
	Enable = *Printing is performed with the chinese characters*

PRINTING WIDTH	*Adjustment of printing width:*
	55mm *80mm ^{D}*

PRINT DENSITY	*Adjusting the printing density:*		
	-50%	*-12%*	*+25%*
	-37%	*0 ^{D}*	*+37%*
	-25%	*+12%*	*+50%*

5.6   Hexadecimal dump

This function is used to diagnose the characters received through the communication port; the characters are printed out both as hexadecimal codes and ASCII codes.

Once the self-test routine has finished, the printer enters Hexadecimal Dump mode. The printer remains in standby until a key is pressed or characters are received through the communication port. For example, in the 200 dpi model, for every 8 characters received, the hexadecimal and corresponding ASCII codes are printed out (if the characters are underlined, the receive buffer is full). Shown below is an example of a Hexadecimal Dump:

```
              HEXADECIMAL DUMP

31 32 33 34 35 36 37 38      12345678
39 30 31 32 33 34 35 36      90123456
37 38 39 75 69 73 64 66      789uisdf
68 6B 6A 73 64 68 66 68      hkjsdhfh
73 64 66 6B 6A 68 73 64      sdfkjhsd
66 73 64 66 6B 68 6A 77      fsdfkhjw
65 69 6F 79 75 77 71 65      eioyuwqe
6F 72 69 75 77 65 72 69      oriuweri
6F 75 77 65 72 69 6F 75      ouweriou
77 65 72 69 6F 75 77 65      weriouwe
72 69 6F 75 77 65 72 68      riouwerh
6B 6C 73 64 66 68 6B 73      klsdfhks
64 66 6B 73 64 66 68 6A      dfksdfhj
73 64 66 6B 6A F2 73 64      sdfkj≥sd
66 6B F2 6A 73 68 64 66      fk≥jshdf
6A 6B 6C 68                  jklh
```

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6   MAINTENANCE

6.1   Planning of cleaning operations

The regular cleaning of the device keeps the print quality and extends its life. The following table shows the recommended planning for the cleaning operations.

EVERY ROLL CHANGE	
Printing head	Use isopropyl alcohol
Printing roller	Use isopropyl alcohol
EVERY 5 ROLL CHANGES	
Paper path	Use compressed air or tweezers
Sensors	Use compressed air
EVERY 6 MONTHS OR AS NEEDED	
Printer case	Use compressed air or a soft cloth

For specific procedures, see the following pages.

NOTE:
If you use the device in dusty environments, you must reduce the intervals between the cleaning operations.
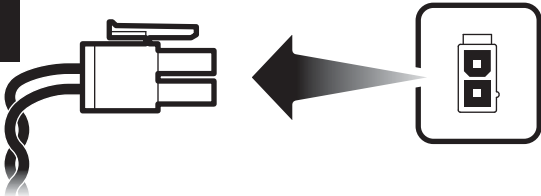
6.2 Cleaning

For periodic cleaning of the printer, see the instructions below.
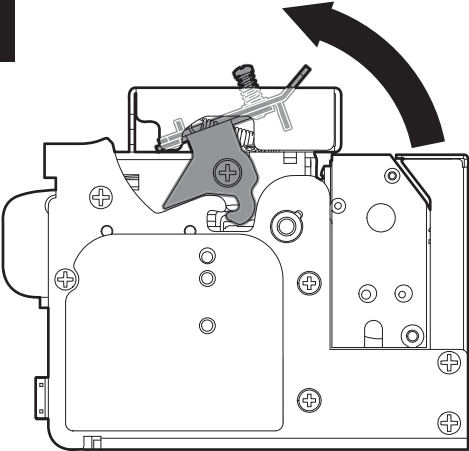
SENSORS

1

Disconnect the
power supply cable.
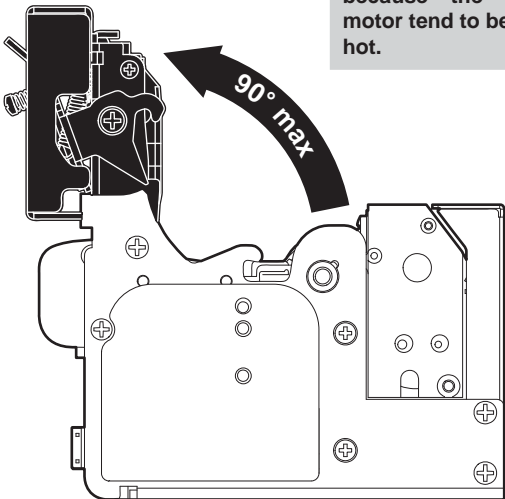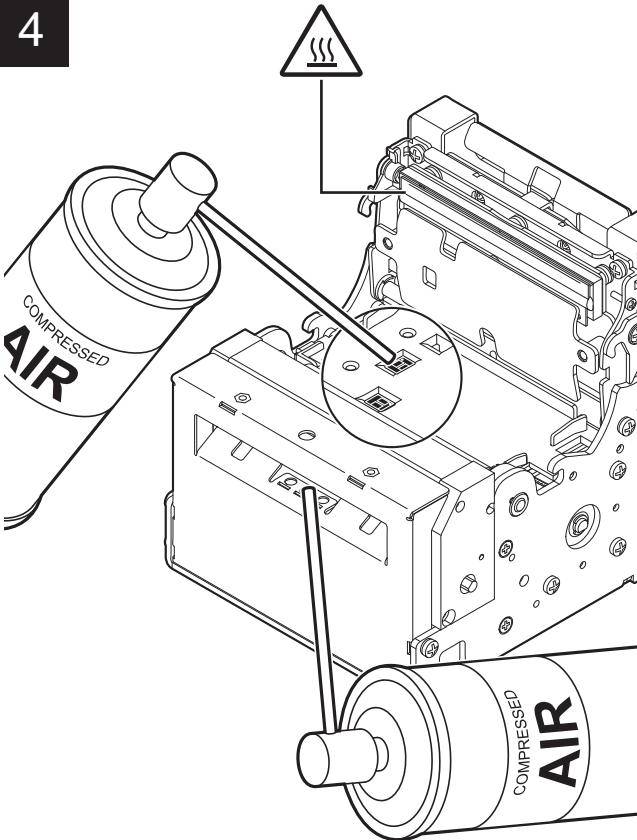
2

Lift the opening lever
for the printing group

3

ATTENTION:
Do not touch the head heating line with bare hands or metal objects.
Do not perform any operation inside the printer immediately after printing because the head and motor tend to become very hot.
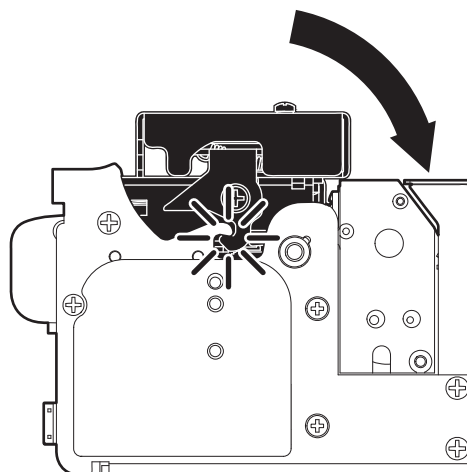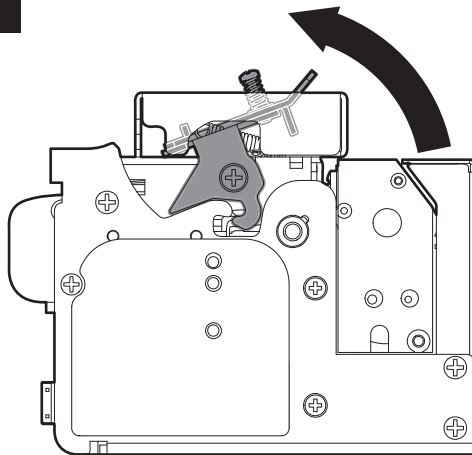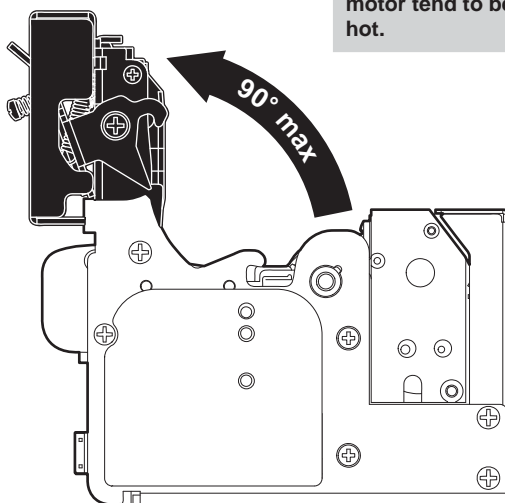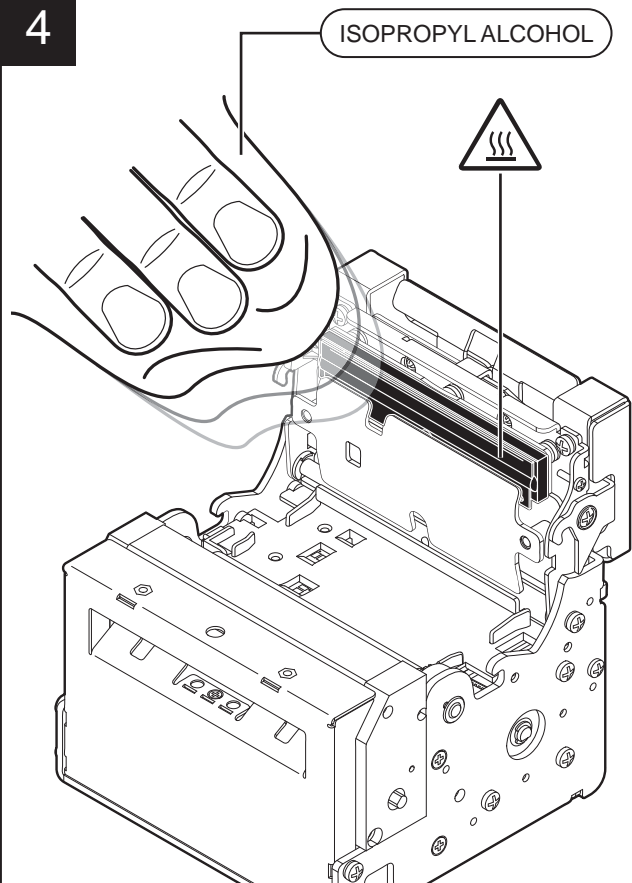

90° max

Open the printer group
to the lock position

4

ATTENTION:
Do not use alcohol, solvents, or hard brushes.
Do not let water or other liquids get inside the machine.

Alcohol solvent

ON
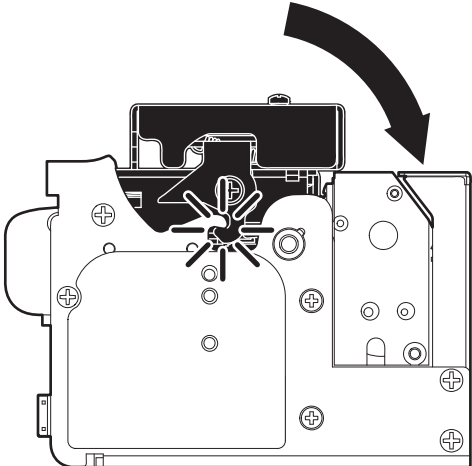
Carefully clean the printer sensors (see par.2.2)
by using compressed air.

5

Close the printer cover

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PAPER PATH

1

Disconnect the
power supply cable.

2

Lift the opening lever
for the printing group

3

ATTENTION:
Do not touch the head heating line with bare hands or metal objects.
Do not perform any operation inside the printer immediately after printing because the head and motor tend to become very hot.

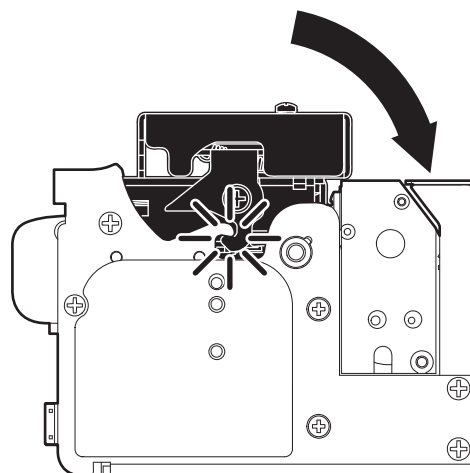

90° max

Open the printer group
to the lock position

4

COMPRESSED
AIR
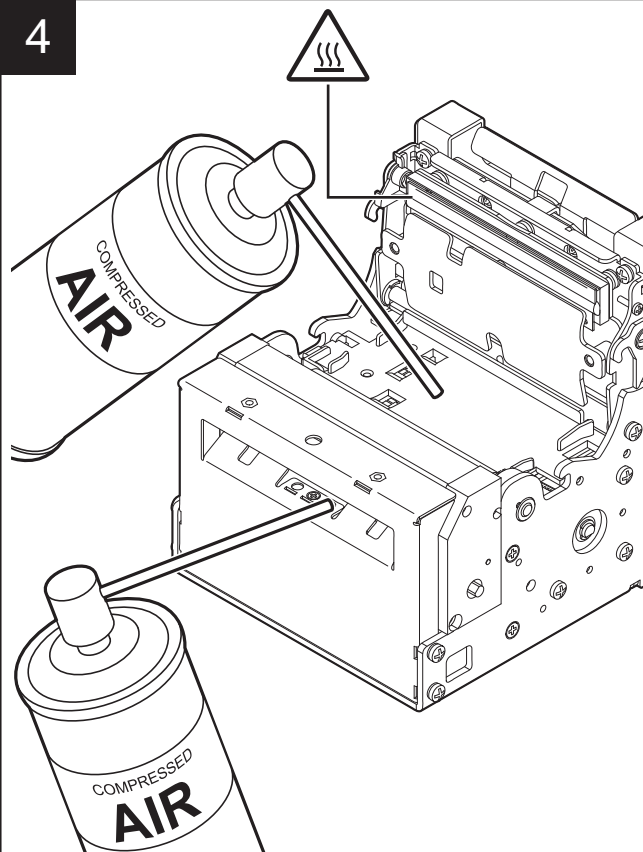
COMPRESSED
AIR

ATTENTION:
Do not use alcohol, solvents, or hard brushes.
Do not let water or other liquids get inside the machine.
To remove paper scraps, use tweezers or compressed air.

Alcohol-solvent

ON

Remove any scraps of paper and the accumulated
paper dust on the paper mouths, on the printing roller,
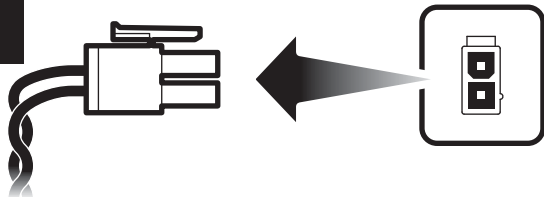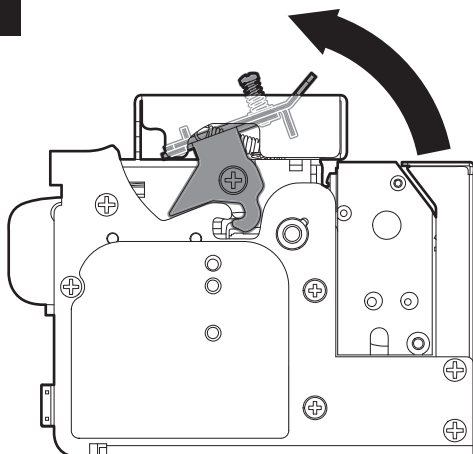on the cutter and on the area around the sensors.

5

Close the printer cover

PRINTING HEAD

1

Disconnect the
power supply cable.

2

Lift the opening lever
for the printing group

3

ATTENTION:
Do not touch the head
heating line with bare
hands or metal objects.
Do not perform any opera-
tion inside the printer
immediately after printing
because the head and
motor tend to become very
hot.

90° max

Open the printer group
to the lock position

4

ISOPROPYL ALCOHOL

ATTENTION:
Do not use alcohol or hard brushes.
Do not let water or other liquids get inside the machine..

ON

Clean the printing head by using
a non-abrasive cloth moistened with isopropyl.

5

Close the printer cover

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PRINTING ROLLER

1

Disconnect the
power supply cable.

2

Lift the opening lever
for the printing group

3

ATTENTION:
Do not touch the head heating line with bare hands or metal objects.
Do not perform any operation inside the printer immediately after printing because the head and motor tend to become very hot.

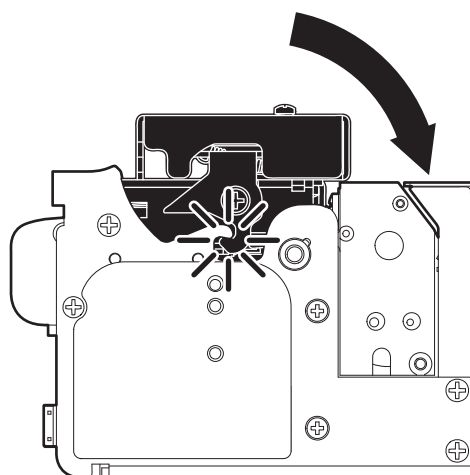**90° max**

Open the printer group
to the lock position

4

ISOPROPYL ALCOHOL

ATTENTION:
Do not use alcohol or hard brushes.
Do not let water or other liquids get inside the machine..

ON
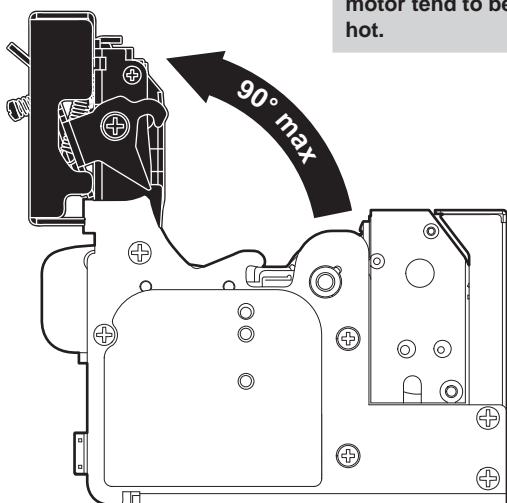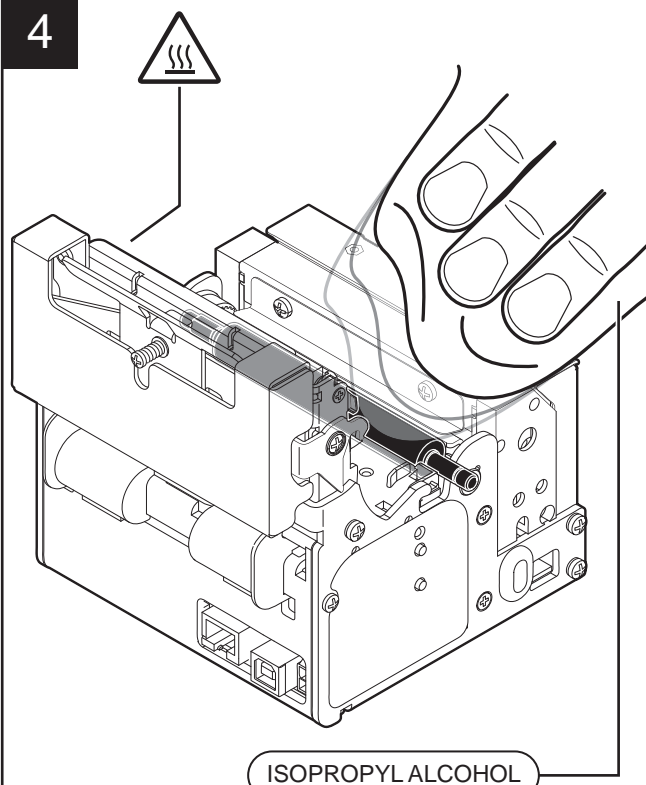
Clean the dragging roller by using
a soft cloth moistened with isopropyl

5

Close the printer cover

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CASE

1
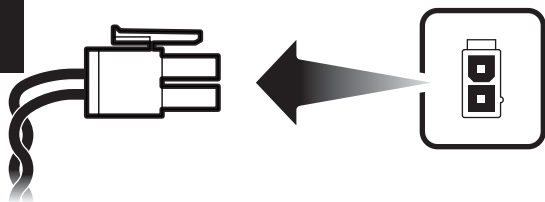
Disconnect the
power supply cable.
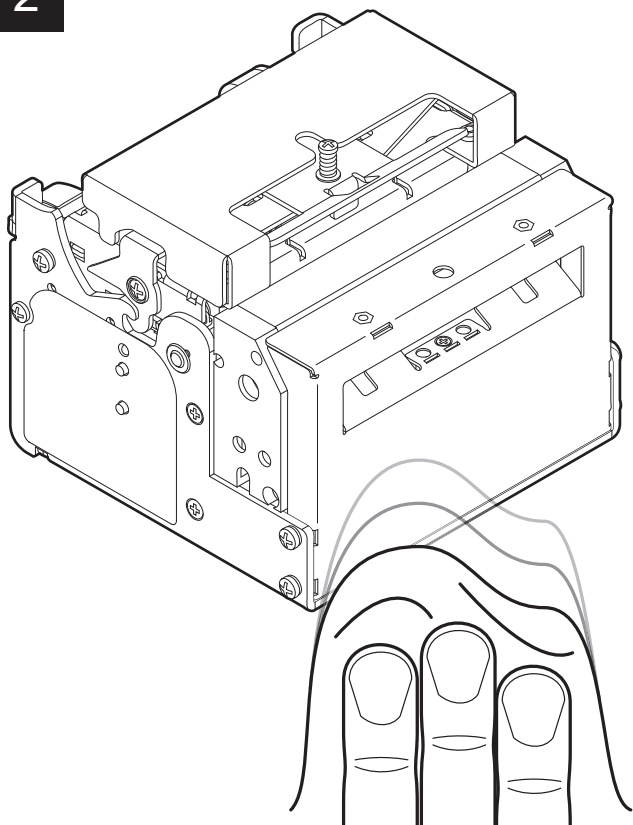
2

ATTENTION:
Do not use alcohol, solvents, or hard brushes.
Do not let water or other liquids get inside the machine.

Alcohol, solvent

ON

To clean the machine,
use pneumatic air or soft cloth.

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6.3   Upgrade firmware

WARNING: During communication between PC/ printer for the firmware update it is strictly forbidden to disconnect the communication cable or to remove the power supply of the devices not to endanger the proper functioning of the printer.

Note: Install on the PC used for printer upgrading the UPGCEPRN software available in the download area of the web site www.custom.biz.
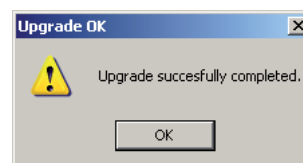
UPDATE VIA SERIAL INTERFACE

Proceed as follows:

1. Write down the product code (14 digits) printed on the product label (see par. 2.2).
2. Go to the web site www.custom.biz and download the appropriate firmware release from the DOWNLOAD area.
3. Print the SETUP report (see chapter 5).
4. Switch OFF the printer.
5. Connect the printer to the PC using a USB cable or a serial cable (see par. 3.3).
6. Switch ON the printer.
7. Start the software UPGCEPRN.
8. Select the update file .PSW location :

9. Select the serial communication port (ex. COM1):
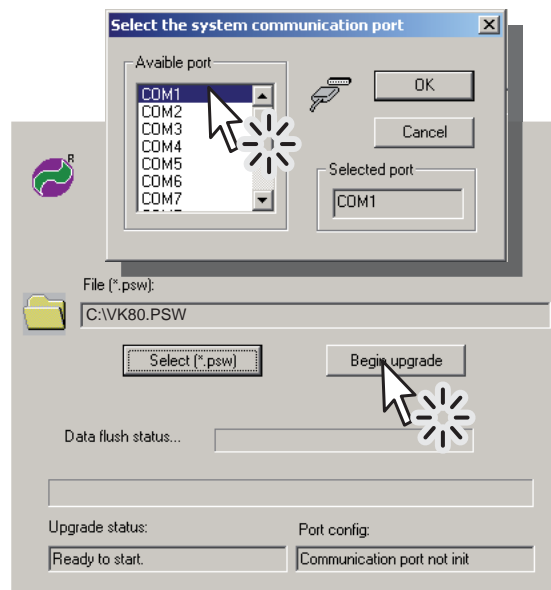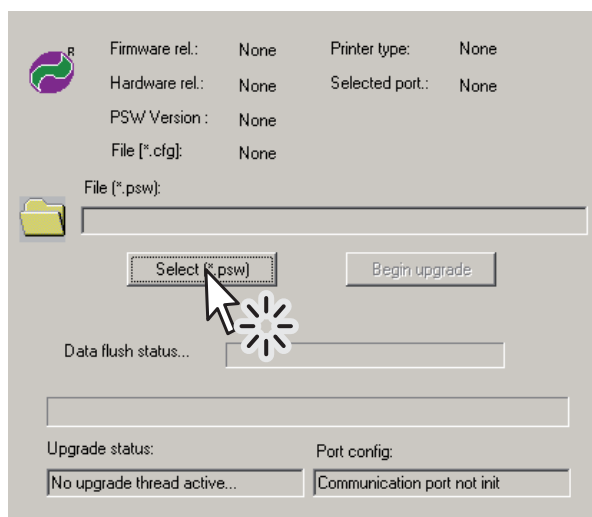
10. Detecting and setting of the parameters necessary for serial communication are performed automatically and then updating begins.
11. After a few minutes a message on the screen warns that the update is completed.

12. Print a new SETUP report to verify the new firmware release (see chapter 5).

UPDATE VIA USB INTERFACE

ATTENTION: Only during the firmware update, the connection between PC and printer must be direct, without the use of wireless HUB.

**ATTENTION: Only during the firmware update, do not connect or disconnect other USB devices.**

NOTE: For communication via USB you must install on PC the printer driver available in the download area of the web site www.custom.biz.

Proceed as follows:

1. Write down the product code (14 digits) printed on the product label (see par. 2.2).
2. Go to the web site www.custom.biz and download the appropriate firmware release from the DOWNLOAD area.
3. Print the SETUP report (see chapter 5).
4. Switch OFF the printer.
5. Connect the printer to the PC using a USB cable or a serial cable (see paragraph 3.2).
6. Switch ON the printer.
7. Start the software UPGCEPRN.
8. Select the update file .PSW location :
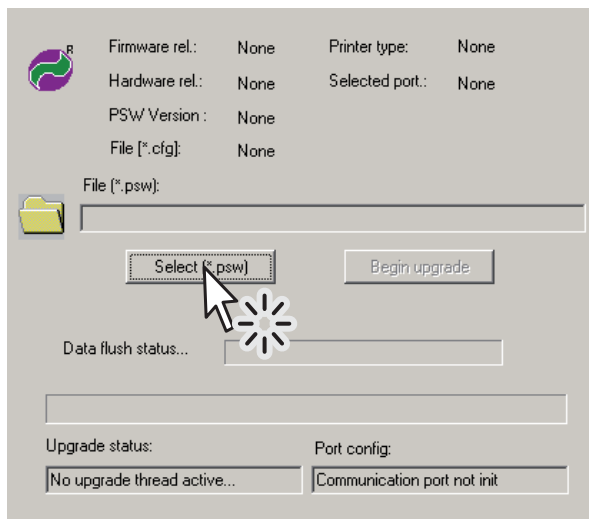
9. Select item USB and then select the USB device among those proposed (ex. VK80):
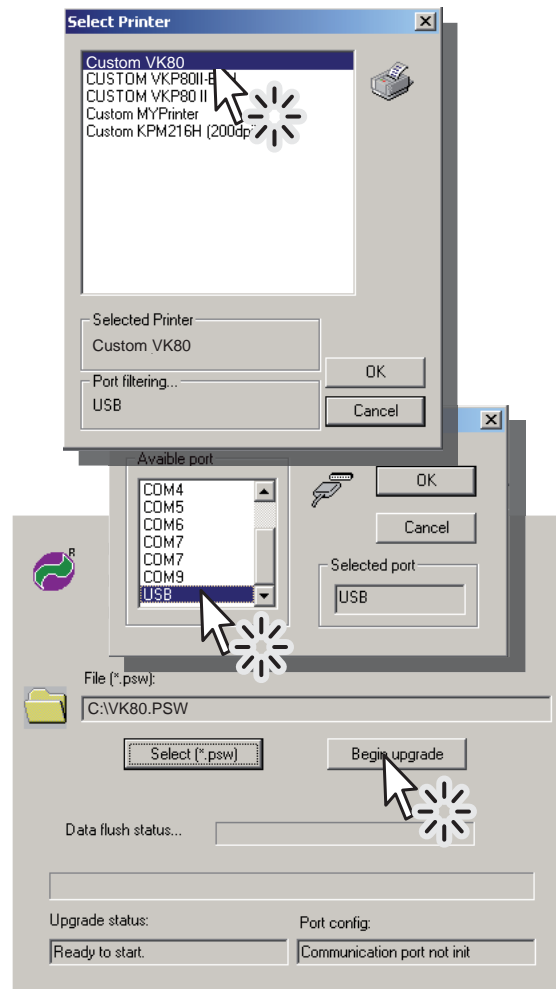
10. After a few minutes a message on the screen warns that the update is completed.
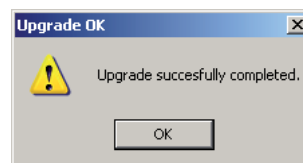
11. Print a new SETUP report to verify the new firmware release (see chapter 5).

7   SPECIFICATIONS

7.1   Hardware specifications

GENERAL	
Sensors	Paper presence, paper presence on output, printing head temperature, mobile detector for notch, printing group open
Emulations	ESC/POS™
INTERFACES	
ETHERNET connector	
200dpi models	10 Mbit/sec
300dpi models	10 Mbit/sec, 100 Mbit/sec
USB connector	12 Mbit/sec (USB 2.0 full speed)
SERIAL connector (RJ11)	
models with lateral connectors	from 1200 to 115200 bps
MEMORIES	
Flash memory	384 Kbytes
Receive buffer	24 Kbytes
PRINTER	
Resolution	
200dpi models	203 DPI (8 dot/mm)
300dpi models	304 DPI (12 dot/mm)
Printing method	thermal, fixed head
Printing width	
200dpi models	from 48mm to 80mm (2mm step)
300dpi models	55mm, 80mm
Printing mode	normal, 90°, 180°, 270°
Printing format	height/width from 1 to 8, bold, reverse, underlined, italic
Character fonts	
200dpi models	PC437, PC850, PC860, PC863, PC865, PC858 (euro)
300dpi models	PC437, PC850, PC860, PC863, PC865, PC858 (euro), GB18030
Printable barcode	UPC-A. UPC-E, EAN13, EAN8, CODE39, ITF, CODABAR, CODE93, CODE128, CODE32, PDF417, DATAMATRIX

7. SPECIFICATIONS

Printing speed [1] [2]	High Quality = 90 mm/sec Normal = 100 mm/sec High Speed = 130 mm/sec Very High Speed [3] = 200 mm/sec
PAPER	
Type of paper	Thermal rolls, thermal side on outside of roll
Paper width [4]	
200dpi models	from 60 mm to 82,5 mm
300dpi models	60mm, 86 mm
Paper weight	da 90 g/m^2 a 250 g/m^2
Recommended types of paper	KANZAN KP460 e KP390 MITSUBISHI TL4000 e TF1067
Paper end	not attached to roll core
External roll diameter [5]	max 180 mm
Internal roll core diameter	50 mm
Core type	Cardboard or plastic
Minimum ticket length [6]	40 mm
CUTTER	
Paper cut	total
Estimated life [1]	1 500 000 cutter number
ELECTRICAL SPECIFICATIONS VK80	
Power supply	24 Vdc ±10% (optional external power supply)
Medium consumption [2] [7]	
200dpi models	1,1 A
300dpi models	1,4 A
Stand-by consumption [7]	
200dpi models	0,04 A
300dpi models	0,07 A
ELECTRICAL SPECIFICATIONS POWER SUPPLY cod.963GE020000003 (OPTIONAL)	
Power supply voltage	from 100Vac to 240Vac
Frequence	from 50Hz to 60Hz
Current (output)	24 Vdc ± 10%
Power	60 W

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ENVIRONMENTAL CONDITIONS	
Operating temperature	from 0°C to +50°C
Relative humidity	from 10% Rh to 80% Rh
Storage temperature	from -20 °C to +70 °C
Storage relative humidity	from 10% Rh to 90% Rh

NOTES:
[1] : Respecting the regular schedule of cleaning for the device components.
[2] : Referred to a standard CUSTOM receipt (L = 10cm, Density = 12,5% dots on).
[3] : Tested with paper weights of 90 g/m^2 .
[4] : For ticket width = 60 mm do not exceed a max length of 250 mm.
[5] : For external rolls diameter higher to Ø100mm it's recommended to use a paper pretensioning device.
[6] : Recommended minimal length of the ticket to ensure the fall of the ticket.
[7] : The values for 200dpi models are referred to "Normal" value of "Current" parameter.

7. SPECIFICATIONS

7.2 Character specifications

EMULAZIONE ESC/POS™			
Character density	11 cpi	15 cpi	20 cpi
Number of columns	88	123	160
Printing speed			
Chars / sec	1760	2460	3200
Lines / sec	20	20	20
Characters (L x H mm)			
Normal	2,25 x 3	1,625 x 3	1,25 x 3

7.3 Printer dimensions

Length	
200dpi models	*(with printing unit closed)* 123 mm *(with printing unit open)* 126,1 mm
300dpi models	150,4 mm
Height	*(with printing unit closed)* 95,7 mm *(with printing unit open)* 130,2 mm
Width	117 mm
Weight	
200dpi models	1676 g
300dpi models	1838 g

The following figures shows the dimensions for the device models.

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200dpi models

300dpi models

7.4   Power supply dimensions cod.963GE020000003 (optional)

Length	127 mm
Height	35,5 mm
Width	56 mm

AC INLET

N.C

GND   +24V

DC OUTPUT WIRE
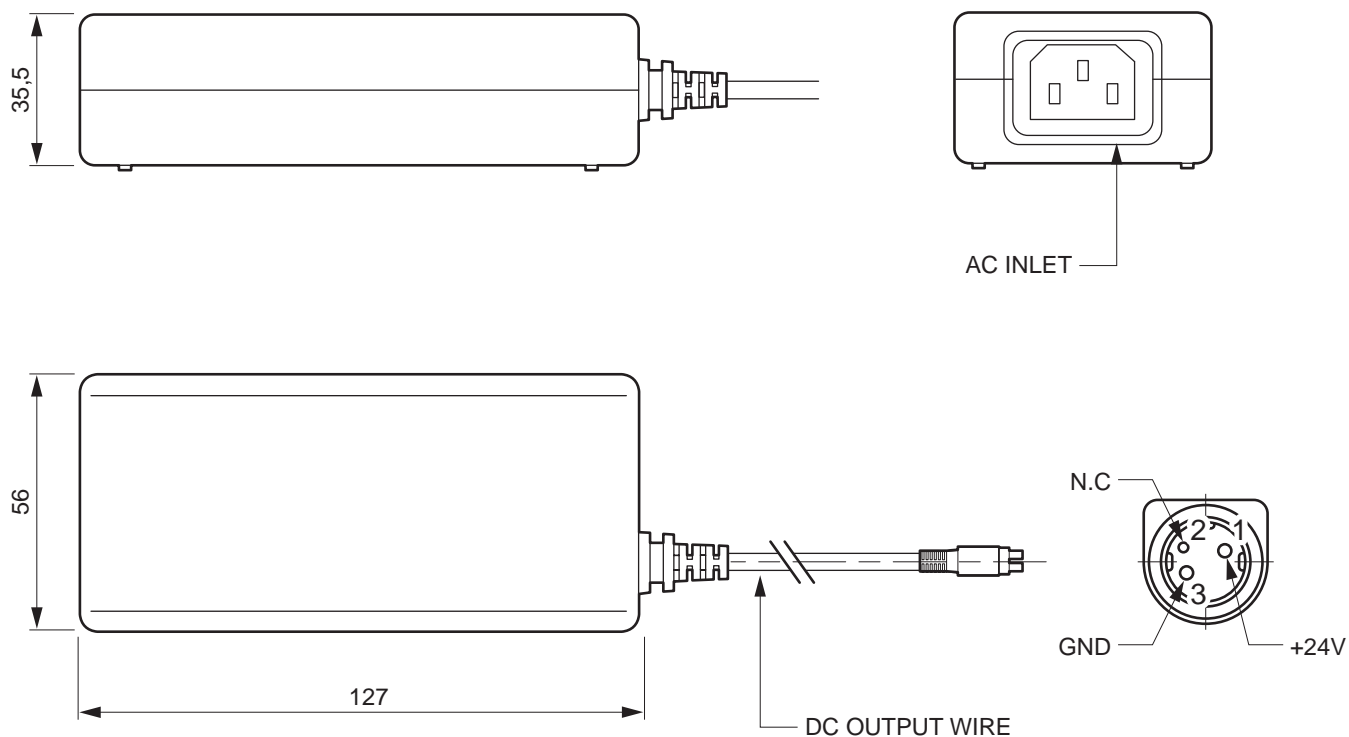
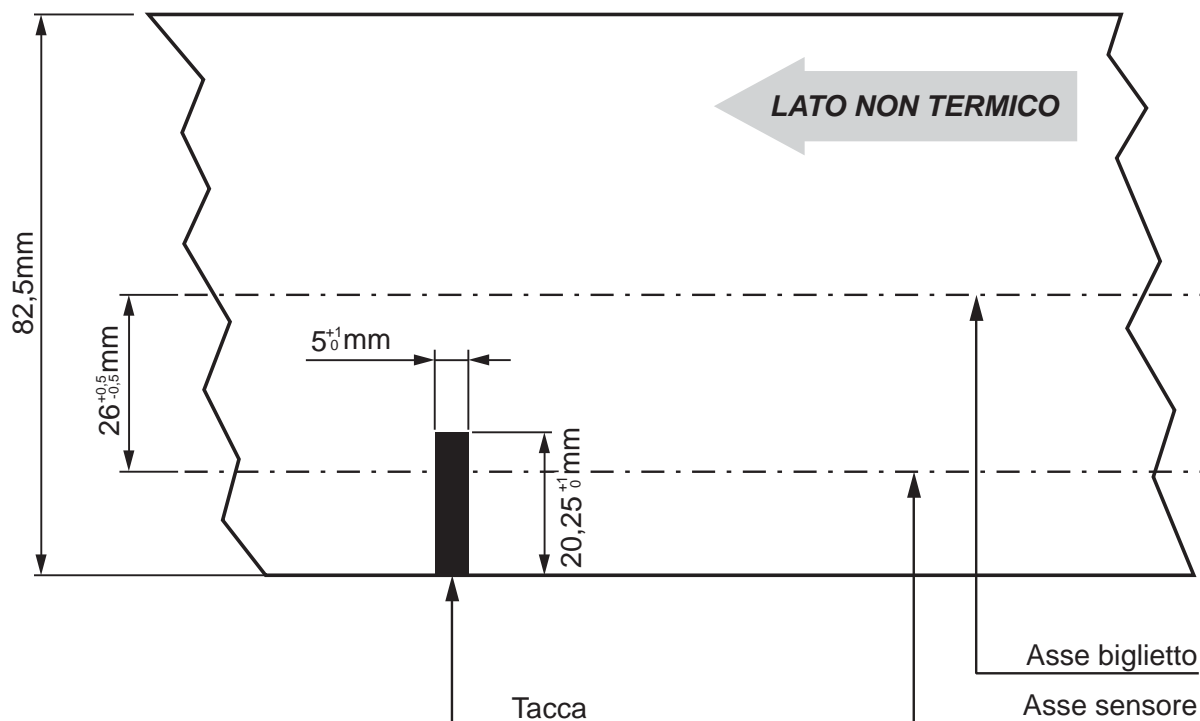## 7.5 Paper specifications (200dpi models)

The notch must be positioned on the non-thermal side of the paper as shown in following figures, showing some examples of paper with alignment notch depending on the width of the paper used.

60mm paper with alignment notch
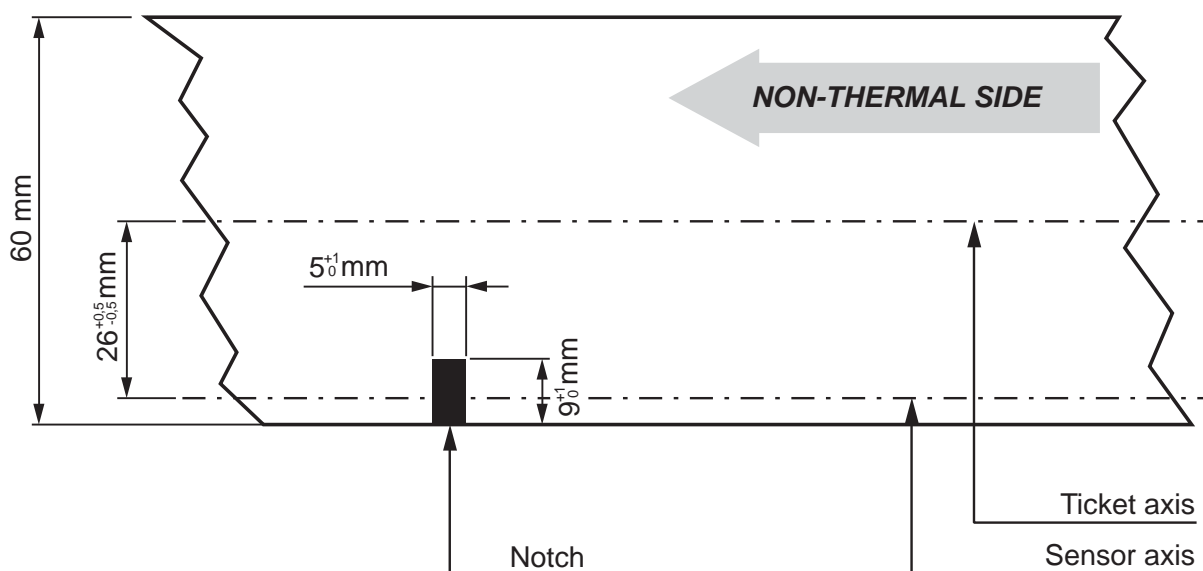
75mm paper with alignment notch
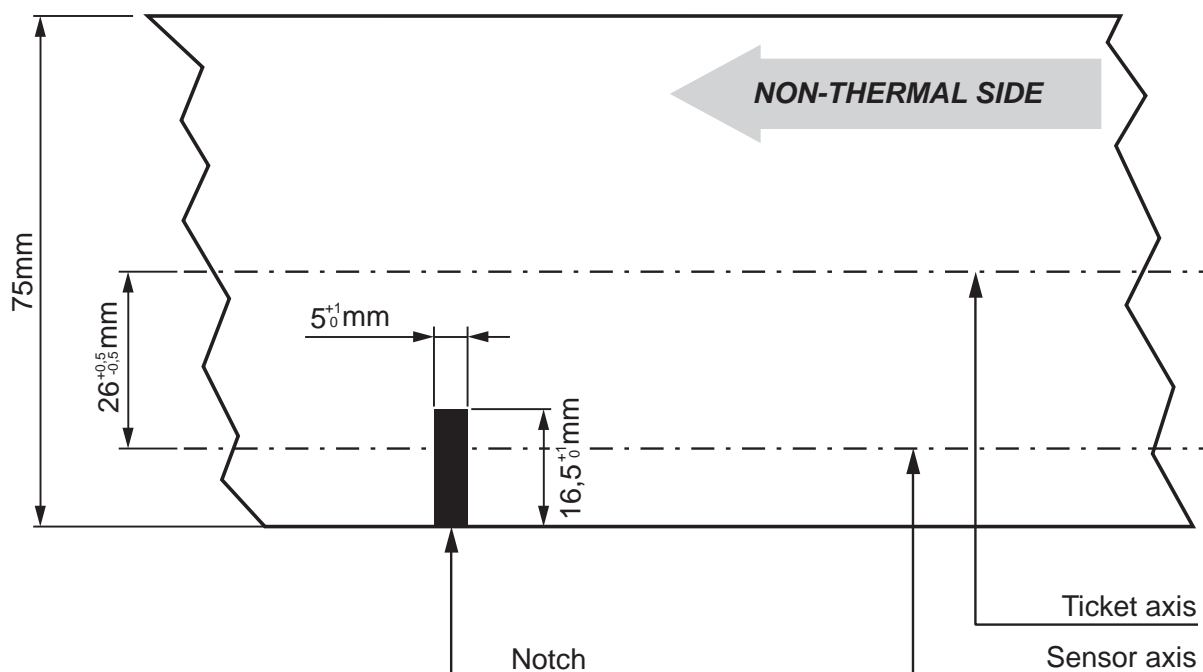
80mm paper with alignment notch

LATO NON TERMICO

80mm

$26^{+0,5}_{-0,5}$mm

5^{+1}_0mm

19^{+1}_0mm

Tacca

Asse biglietto

Asse sensore

82,5mm paper with alignment notch

LATO NON TERMICO

82,5mm

$26^{+0,5}_{-0,5}$mm

5^{+1}_0mm

$20,25^{+1}_0$mm

Tacca

Asse biglietto

Asse sensore
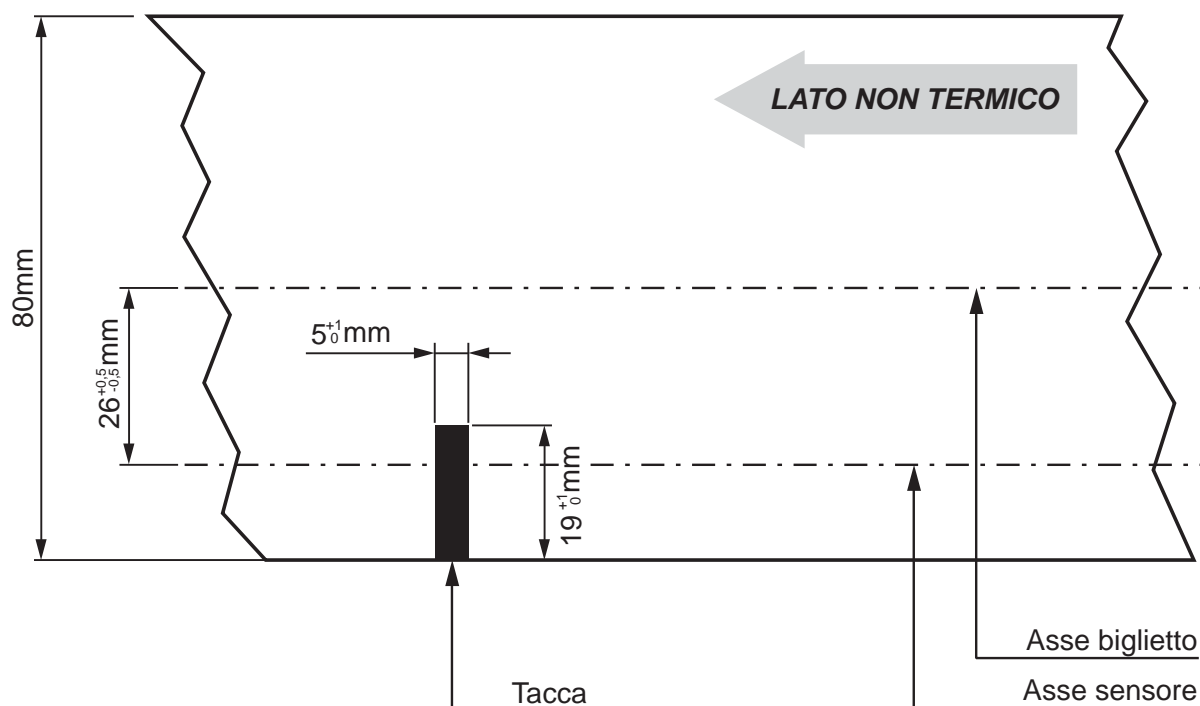
7.6   Paper specifications (300dpi models)

Paper with labels

To properly use the alignment commands is necessary to use labels that comply with the following dimensions:
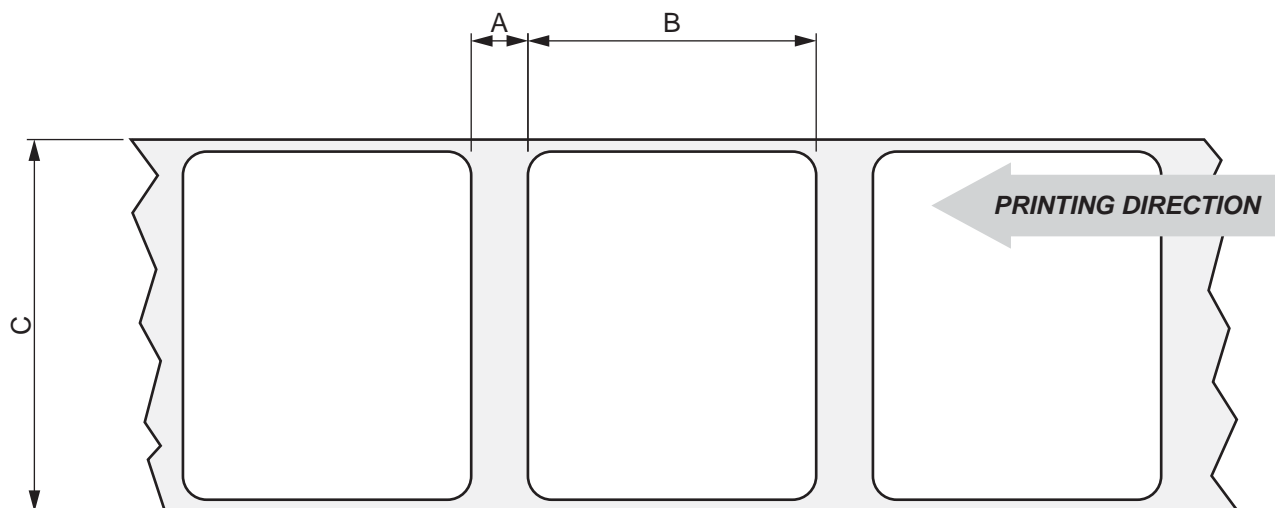
A ≥ 10 mm
B ≥ 25,4 mm (1 inch)
D = 60 mm or 86mm

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7.7   Western characters

The printer has 3 fonts of varying width (11, 15 and 20 cpi) which may be accessed through programming or control characters.
Each of these fonts offers the following code tables: PC437, PC850, PC860, PC863, PC865, PC858.

PC437 CODE TABLE (Usa, Standard Europe)

Char	SP	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
Hex	0020	0021	0022	0023	0024	0025	0026	0027	0028	0029	002A	002B	002C	002D	002E	002F
Dec	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
Char	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
Hex	0030	0031	0032	0033	0034	0035	0036	0037	0038	0039	003A	003B	003C	003D	003E	003F
Dec	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
Char	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Hex	0040	0041	0042	0043	0044	0045	0046	0047	0048	0049	004A	004B	004C	004D	004E	004F
Dec	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
Char	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
Hex	0050	0051	0052	0053	0054	0055	0056	0057	0058	0059	005A	005B	005C	005D	005E	005F
Dec	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
Char	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
Hex	0060	0061	0062	0063	0064	0065	0066	0067	0068	0069	006A	006B	006C	006D	006E	006F
Dec	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
Char	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	⌂
Hex	0070	0071	0072	0073	0074	0075	0076	0077	0078	0079	007A	007B	007C	007D	007E	007F
Dec	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
Char	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
Hex	0080	0081	0082	0083	0084	0085	0086	0087	0088	0089	008A	008B	008C	008D	008E	008F
Dec	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
Char	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	¢	£	¥	Pts	ƒ
Hex	0090	0091	0092	0093	0094	0095	0096	0097	0098	0099	009A	009B	009C	009D	009E	009F
Dec	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
Char	á	í	ó	ú	ñ	Ñ	ª	º	¿	⌐	¬	½	¼	¡	«	»
Hex	00A0	00A1	00A2	00A3	00A4	00A5	00A6	00A7	00A8	00A9	00AA	00AB	00AC	00AD	00AE	00AF
Dec	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
Char	░	▒	▓	│	┤	╡	╢	╖	╕	╣	║	╗	╝	╜	╛	┐
Hex	00B0	00B1	00B2	00B3	00B4	00B5	00B6	00B7	00B8	00B9	00BA	00BB	00BC	00BD	00BE	00BF
Dec	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
Char	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
Hex	00C0	00C1	00C2	00C3	00C4	00C5	00C6	00C7	00C8	00C9	00CA	00CB	00CC	00CD	00CE	00CF
Dec	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
Char	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	█	▄	▌	▐	▀
Hex	00D0	00D1	00D2	00D3	00D4	00D5	00D6	00D7	00D8	00D9	00DA	00DB	00DC	00DD	00DE	00DF
Dec	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
Char	α	ß	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ	∞	φ	ε	∩
Hex	00E0	00E1	00E2	00E3	00E4	00E5	00E6	00E7	00E8	00E9	00EA	00EB	00EC	00ED	00EE	00EF
Dec	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
Char	≡	±	≥	≤	⌠	⌡	÷	≈	°	∙	·	√	n	²	■	NBSP
Hex	00F0	00F1	00F2	00F3	00F4	00F5	00F6	00F7	00F8	00F9	00FA	00FB	00FC	00FD	00FE	00FF
Dec	240	241	242	243	244	245	246	247	248	249	250	251	252	253	251	255

PC850 CODE TABLE (Multilingual)

Char	SP	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
Hex	0020	0021	0022	0023	0024	0025	0026	0027	0028	0029	002A	002B	002C	002D	002E	002F
Dec	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
Char	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
Hex	0030	0031	0032	0033	0034	0035	0036	0037	0038	0039	003A	003B	003C	003D	003E	003F
Dec	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
Char	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Hex	0040	0041	0042	0043	0044	0045	0046	0047	0048	0049	004A	004B	004C	004D	004E	004F
Dec	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
Char	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
Hex	0050	0051	0052	0053	0054	0055	0056	0057	0058	0059	005A	005B	005C	005D	005E	005F
Dec	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
Char	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
Hex	0060	0061	0062	0063	0064	0065	0066	0067	0068	0069	006A	006B	006C	006D	006E	006F
Dec	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
Char	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	⌂
Hex	0070	0071	0072	0073	0074	0075	0076	0077	0078	0079	007A	007B	007C	007D	007E	007F
Dec	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
Char	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
Hex	0080	0081	0082	0083	0084	0085	0086	0087	0088	0089	008A	008B	008C	008D	008E	008F
Dec	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
Char	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	ø	£	Ø	×	ƒ
Hex	0090	0091	0092	0093	0094	0095	0096	0097	0098	0099	009A	009B	009C	009D	009E	009F
Dec	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
Char	á	í	ó	ú	ñ	Ñ	ª	º	¿	®	¬	½	¼	¡	«	»
Hex	00A0	00A1	00A2	00A3	00A4	00A5	00A6	00A7	00A8	00A9	00AA	00AB	00AC	00AD	00AE	00AF
Dec	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
Char	░	▒	▓	│	┤	Á	Â	À	©	╣	║	╗	╝	¢	¥	┐
Hex	00B0	00B1	00B2	00B3	00B4	00B5	00B6	00B7	00B8	00B9	00BA	00BB	00BC	00BD	00BE	00BF
Dec	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
Char	└	┴	┬	├	─	┼	ã	Ã	╚	╔	╩	╦	╠	═	╬	¤
Hex	00C0	00C1	00C2	00C3	00C4	00C5	00C6	00C7	00C8	00C9	00CA	00CB	00CC	00CD	00CE	00CF
Dec	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
Char	ð	Ð	Ê	Ë	È	ı	Í	Î	Ï	┘	┌	█	▄	¦	Ì	▀
Hex	00D0	00D1	00D2	00D3	00D4	00D5	00D6	00D7	00D8	00D9	00DA	00DB	00DC	00DD	00DE	00DF
Dec	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
Char	Ó	ß	Ô	Ò	õ	Õ	µ	þ	Þ	Ú	Û	Ù	ý	Ý	¯	´
Hex	00E0	00E1	00E2	00E3	00E4	00E5	00E6	00E7	00E8	00E9	00EA	00EB	00EC	00ED	00EE	00EF
Dec	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
Char	SHY	±	‗	¾	¶	§	÷	¸	°	¨	·	¹	³	²	■	NBSP
Hex	00F0	00F1	00F2	00F3	00F4	00F5	00F6	00F7	00F8	00F9	00FA	00FB	00FC	00FD	00FE	00FF
Dec	240	241	242	243	244	245	246	247	248	249	250	251	252	253	251	255

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PC860 CODE TABLE (Portuguese)

Char	SP	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
Hex	0020	0021	0022	0023	0024	0025	0026	0027	0028	0029	002A	002B	002C	002D	002E	002F
Dec	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
Char	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
Hex	0030	0031	0032	0033	0034	0035	0036	0037	0038	0039	003A	003B	003C	003D	003E	003F
Dec	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
Char	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Hex	0040	0041	0042	0043	0044	0045	0046	0047	0048	0049	004A	004B	004C	004D	004E	004F
Dec	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
Char	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
Hex	0050	0051	0052	0053	0054	0055	0056	0057	0058	0059	005A	005B	005C	005D	005E	005F
Dec	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
Char	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
Hex	0060	0061	0062	0063	0064	0065	0066	0067	0068	0069	006A	006B	006C	006D	006E	006F
Dec	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
Char	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	⌂
Hex	0070	0071	0072	0073	0074	0075	0076	0077	0078	0079	007A	007B	007C	007D	007E	007F
Dec	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
Char	Ç	ü	é	â	ã	à	Á	ç	ê	Ê	è	Í	Ô	ì	Ã	Â
Hex	0080	0081	0082	0083	0084	0085	0086	0087	0088	0089	008A	008B	008C	008D	008E	008F
Dec	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
Char	É	À	È	ô	ö	ò	Ú	ù	Ì	Õ	Ü	¢	£	Ù	Pts	Ó
Hex	0090	0091	0092	0093	0094	0095	0096	0097	0098	0099	009A	009B	009C	009D	009E	009F
Dec	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
Char	á	í	ó	ú	ñ	Ñ	ª	º	¿	Ò	¬	½	¼	¡	«	»
Hex	00A0	00A1	00A2	00A3	00A4	00A5	00A6	00A7	00A8	00A9	00AA	00AB	00AC	00AD	00AE	00AF
Dec	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
Char	░	▒	▓	│	┤	╡	╢	╖	╕	╣	║	╗	╝	╜	╛	┐
Hex	00B0	00B1	00B2	00B3	00B4	00B5	00B6	00B7	00B8	00B9	00BA	00BB	00BC	00BD	00BE	00BF
Dec	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
Char	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
Hex	00C0	00C1	00C2	00C3	00C4	00C5	00C6	00C7	00C8	00C9	00CA	00CB	00CC	00CD	00CE	00CF
Dec	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
Char	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	█	▄	▌	▐	▀
Hex	00D0	00D1	00D2	00D3	00D4	00D5	00D6	00D7	00D8	00D9	00DA	00DB	00DC	00DD	00DE	00DF
Dec	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
Char	α	ß	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ	∞	φ	ε	∩
Hex	00E0	00E1	00E2	00E3	00E4	00E5	00E6	00E7	00E8	00E9	00EA	00EB	00EC	00ED	00EE	00EF
Dec	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
Char	≡	±	≥	≤	⌠	⌡	÷	≈	°	∙	·	√	ⁿ	²	■	NBSP
Hex	00F0	00F1	00F2	00F3	00F4	00F5	00F6	00F7	00F8	00F9	00FA	00FB	00FC	00FD	00FE	00FF
Dec	240	241	242	243	244	245	246	247	248	249	250	251	252	253	251	255

PC863 CODE TABLE (Canadian, French)

Char	SP	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
Hex	0020	0021	0022	0023	0024	0025	0026	0027	0028	0029	002A	002B	002C	002D	002E	002F
Dec	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
Char	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
Hex	0030	0031	0032	0033	0034	0035	0036	0037	0038	0039	003A	003B	003C	003D	003E	003F
Dec	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
Char	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Hex	0040	0041	0042	0043	0044	0045	0046	0047	0048	0049	004A	004B	004C	004D	004E	004F
Dec	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
Char	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
Hex	0050	0051	0052	0053	0054	0055	0056	0057	0058	0059	005A	005B	005C	005D	005E	005F
Dec	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
Char	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
Hex	0060	0061	0062	0063	0064	0065	0066	0067	0068	0069	006A	006B	006C	006D	006E	006F
Dec	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
Char	p	q	r	s	t	u	v	w	x	y	z	{			}	~	⌂
Hex	0070	0071	0072	0073	0074	0075	0076	0077	0078	0079	007A	007B	007C	007D	007E	007F
Dec	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
Char	Ç	ü	é	â	Â	à	¶	ç	ê	ë	è	ï	î	‗	À	§
Hex	0080	0081	0082	0083	0084	0085	0086	0087	0088	0089	008A	008B	008C	008D	008E	008F
Dec	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
Char	É	È	Ê	ô	Ë	Ï	û	ù	¤	Ô	Ü	¢	£	Ù	Û	ƒ
Hex	0090	0091	0092	0093	0094	0095	0096	0097	0098	0099	009A	009B	009C	009D	009E	009F
Dec	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
Char	¦	´	ó	ú	¨	¸	³	‾	Î	⌐	¬	½	¼	¾	«	»
Hex	00A0	00A1	00A2	00A3	00A4	00A5	00A6	00A7	00A8	00A9	00AA	00AB	00AC	00AD	00AE	00AF
Dec	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
Char	░	▒	▓	│	┤	╡	╢	╖	╕	╣	║	╗	╝	╜	╛	┐
Hex	00B0	00B1	00B2	00B3	00B4	00B5	00B6	00B7	00B8	00B9	00BA	00BB	00BC	00BD	00BE	00BF
Dec	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
Char	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
Hex	00C0	00C1	00C2	00C3	00C4	00C5	00C6	00C7	00C8	00C9	00CA	00CB	00CC	00CD	00CE	00CF
Dec	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
Char	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	█	▄	▌	▐	▀
Hex	00D0	00D1	00D2	00D3	00D4	00D5	00D6	00D7	00D8	00D9	00DA	00DB	00DC	00DD	00DE	00DF
Dec	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
Char	α	ß	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ	∞	φ	ε	∩
Hex	00E0	00E1	00E2	00E3	00E4	00E5	00E6	00E7	00E8	00E9	00EA	00EB	00EC	00ED	00EE	00EF
Dec	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
Char	≡	±	≥	≤	⌠	⌡	÷	≈	°	∙	·	√	ⁿ	²	■	NBSP
Hex	00F0	00F1	00F2	00F3	00F4	00F5	00F6	00F7	00F8	00F9	00FA	00FB	00FC	00FD	00FE	00FF
Dec	240	241	242	243	244	245	246	247	248	249	250	251	252	253	251	255

PC865 CODE TABLE (Nordic)

Char	SP	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
Hex	0020	0021	0022	0023	0024	0025	0026	0027	0028	0029	002A	002B	002C	002D	002E	002F
Dec	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
Char	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
Hex	0030	0031	0032	0033	0034	0035	0036	0037	0038	0039	003A	003B	003C	003D	003E	003F
Dec	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
Char	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Hex	0040	0041	0042	0043	0044	0045	0046	0047	0048	0049	004A	004B	004C	004D	004E	004F
Dec	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
Char	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
Hex	0050	0051	0052	0053	0054	0055	0056	0057	0058	0059	005A	005B	005C	005D	005E	005F
Dec	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
Char	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
Hex	0060	0061	0062	0063	0064	0065	0066	0067	0068	0069	006A	006B	006C	006D	006E	006F
Dec	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
Char	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	△
Hex	0070	0071	0072	0073	0074	0075	0076	0077	0078	0079	007A	007B	007C	007D	007E	007F
Dec	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
Char	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
Hex	0080	0081	0082	0083	0084	0085	0086	0087	0088	0089	008A	008B	008C	008D	008E	008F
Dec	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
Char	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	ø	£	Ø	Pts	ƒ
Hex	0090	0091	0092	0093	0094	0095	0096	0097	0098	0099	009A	009B	009C	009D	009E	009F
Dec	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
Char	á	í	ó	ú	ñ	Ñ	ª	º	¿	⌐	¬	½	¼	¡	«	¤
Hex	00A0	00A1	00A2	00A3	00A4	00A5	00A6	00A7	00A8	00A9	00AA	00AB	00AC	00AD	00AE	00AF
Dec	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
Char	░	▒	▓	│	┤	╡	╢	╖	╕	╣	║	╗	╝	╜	╛	┐
Hex	00B0	00B1	00B2	00B3	00B4	00B5	00B6	00B7	00B8	00B9	00BA	00BB	00BC	00BD	00BE	00BF
Dec	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
Char	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
Hex	00C0	00C1	00C2	00C3	00C4	00C5	00C6	00C7	00C8	00C9	00CA	00CB	00CC	00CD	00CE	00CF
Dec	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
Char	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	█	▄	▌	▐	▀
Hex	00D0	00D1	00D2	00D3	00D4	00D5	00D6	00D7	00D8	00D9	00DA	00DB	00DC	00DD	00DE	00DF
Dec	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
Char	α	ß	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ	∞	φ	ε	∩
Hex	00E0	00E1	00E2	00E3	00E4	00E5	00E6	00E7	00E8	00E9	00EA	00EB	00EC	00ED	00EE	00EF
Dec	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
Char	≡	±	≥	≤	⌠	⌡	÷	≈	°	∙	·	√	ⁿ	²	■	NBSP
Hex	00F0	00F1	00F2	00F3	00F4	00F5	00F6	00F7	00F8	00F9	00FA	00FB	00FC	00FD	00FE	00FF
Dec	240	241	242	243	244	245	246	247	248	249	250	251	252	253	251	255

PC858 CODE TABLE (Euro symbol)

Char	SP	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
Hex	0020	0021	0022	0023	0024	0025	0026	0027	0028	0029	002A	002B	002C	002D	002E	002F
Dec	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
Char	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
Hex	0030	0031	0032	0033	0034	0035	0036	0037	0038	0039	003A	003B	003C	003D	003E	003F
Dec	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
Char	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Hex	0040	0041	0042	0043	0044	0045	0046	0047	0048	0049	004A	004B	004C	004D	004E	004F
Dec	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
Char	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
Hex	0050	0051	0052	0053	0054	0055	0056	0057	0058	0059	005A	005B	005C	005D	005E	005F
Dec	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
Char	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
Hex	0060	0061	0062	0063	0064	0065	0066	0067	0068	0069	006A	006B	006C	006D	006E	006F
Dec	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
Char	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	⌂
Hex	0070	0071	0072	0073	0074	0075	0076	0077	0078	0079	007A	007B	007C	007D	007E	007F
Dec	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
Char	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
Hex	0080	0081	0082	0083	0084	0085	0086	0087	0088	0089	008A	008B	008C	008D	008E	008F
Dec	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
Char	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	ø	£	Ø	×	ƒ
Hex	0090	0091	0092	0093	0094	0095	0096	0097	0098	0099	009A	009B	009C	009D	009E	009F
Dec	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
Char	á	í	ó	ú	ñ	Ñ	ª	º	¿	®	¬	½	¼	¡	«	»
Hex	00A0	00A1	00A2	00A3	00A4	00A5	00A6	00A7	00A8	00A9	00AA	00AB	00AC	00AD	00AE	00AF
Dec	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
Char	░	▒	▓	│	┤	Á	Â	À	©	╣	║	╗	╝	¢	¥	┐
Hex	00B0	00B1	00B2	00B3	00B4	00B5	00B6	00B7	00B8	00B9	00BA	00BB	00BC	00BD	00BE	00BF
Dec	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
Char	└	┴	┬	├	─	┼	ã	Ã	╚	╔	╩	╦	╠	═	╬	¤
Hex	00C0	00C1	00C2	00C3	00C4	00C5	00C6	00C7	00C8	00C9	00CA	00CB	00CC	00CD	00CE	00CF
Dec	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
Char	ð	Ð	Ê	Ë	È	€	Í	Î	Ï	┘	┌	█	▄	¦	Ì	▀
Hex	00D0	00D1	00D2	00D3	00D4	00D5	00D6	00D7	00D8	00D9	00DA	00DB	00DC	00DD	00DE	00DF
Dec	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
Char	Ó	ß	Ô	Ò	õ	Õ	µ	þ	Þ	Ú	Û	Ù	ý	Ý	¯	´
Hex	00E0	00E1	00E2	00E3	00E4	00E5	00E6	00E7	00E8	00E9	00EA	00EB	00EC	00ED	00EE	00EF
Dec	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
Char	SHY	±	=	¾	¶	§	÷	¸	°	¨	·	¹	³	²	■	NBSP
Hex	00F0	00F1	00F2	00F3	00F4	00F5	00F6	00F7	00F8	00F9	00FA	00FB	00FC	00FD	00FE	00FF
Dec	240	241	242	243	244	245	246	247	248	249	250	251	252	253	251	255

NOTE: To print the Euro (€) symbol, the command sequence is: $1B, $74, $13, $D5 (see Commands Manual).

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8 CONSUMABLES

The following table shows the list of available consumables for device:

DESCRIPTION	CODE
200dpi models	
THERMAL PAPER ROLL WITH BACK SIDE PRE-PRINTED weight = 58g/m^2 width = 80mm Ø external = 48mm Ø core = 25mm	**67300000000395**
THERMAL PAPER ROLL weight = 58g/m^2 width = 80mm Ø external = 130mm Ø core = 25mm	**67300000000380**

9 ACCESSORIES

The available accessories for the device are listed in the following table:

DESCRIPTION	CODE
POWER SUPPLY (for technical specifications, see paragraphs 7.1 and 7.4)	**963GE020000003**
ADAPTER CABLE FOR POWER SUPPLY (see the paragraph 9.1)	**26900000000005**

9.1 Adapter cable for power supply

For the device is available an adapter cable (cod. 26900000000005) supplied as an accessory, for connecting the printer to the external power supply unit (cod. 963GE020000003 - optional).

<u>**Assembly instructions**</u>
(all models)

Connect the adapter cable to the power supply unit as follows:
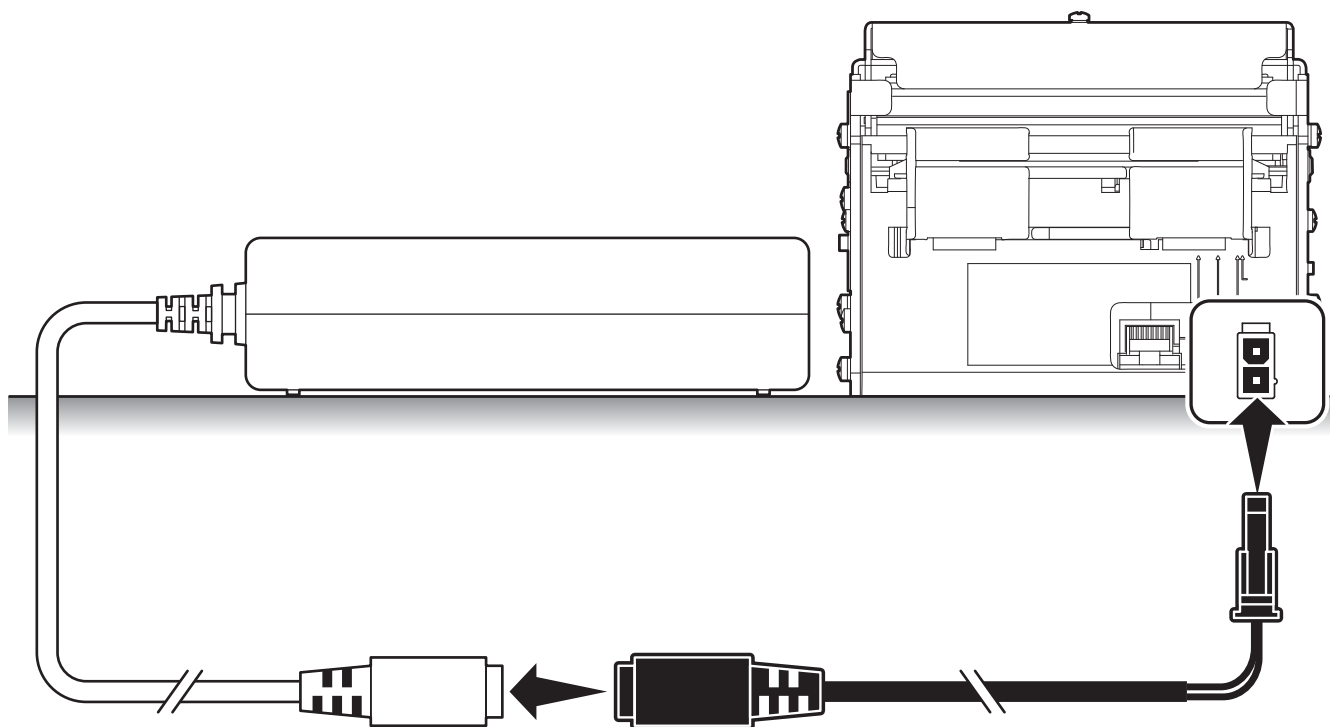
10   ALIGNMENT

Device is provided with sensors for the use of alignment notch in order to handle roll of tickets with pre-printed fields and a fixed length.

The alignment notch may be formed by
• black mark printed on paper, for 200dpi models (see par.7.5);
• gap between two labels, for 300dpi models (see par.7.6).

The alignment sensors assembled on printer, are "reflection" sensors: this kind of sensor emits a band of light and detects the quantity of light reflected to it.
The presence of the notch is therefore detected by the amount of light that returns to the sensor, considering that the light is reflected by the white paper and absorbed by the black mark.

To use tickets with labels with gap, the sensors on 300dpi models are used as "transparence" sensors. In this case, one of the two sensors coupled two by two, used as transmitter sensor, emits a beam of light and the quantity of light which reaches the opposite receiver sensor is detected.
The presence of the gap is detected evaluating the amount of light that arrives to the opposite sensor, considering that the paper doesn't allow the beam of light to reach the receiver, whereas a gap lets the light to reach the receiver.

The following paragraphs show how to correctly set the configuration parameters of device in order to assure the alignment.

10.1 Enable alignment

The 200dpi models are provided with a fixed sensor for alignmentment facing the non-thermal side of paper. The 300dpi models are provided with two fixed sensors coupled two by two (see par. 2.2)
To guarantee the alignment, it is necessary to enable the parameter "Notch Alignment" during the Setup procedure (see chapter 5).

10.2 Calibration

The sensor calibration occurs automatically and consists in adjusting the quantity of light emitted to match the degree of whiteness of the paper used and the degree of black of the mark printed on paper.

The device automatically performs the self-calibration during the Setup procedure only if the "Notch Alignment" parameter is set on "Enabled" (see chapter 5).

When self-calibration starts, the device performs some paper feeds and then it prints the calibration result and the value (numeric and as a percentage) of the *"Threshold White"* parameter that indicates the power-up level of the sensor emitting side (the value ranges from 0V to 5V):

        Autosetting Notch : OK
   Threshold White : 2,3V [70%]

The "Autosetting Notch" parameter indicates the result of the self-calibration procedure; OK will appear if it has been successful, NOT OK will appear if the procedure has failed.

After the printing of the procedure result, the device offers the execution of the function of paper characterization "Characterize Paper" and the change of the "Notch Threshold" parameter which represents the detection threshold of the notch.
Choosing the "Yes" value for the "Characterize Paper" parameter, the device prints a graphic representation (see following figures) of the outgoing voltage of the alignment sensor (expressed as a percentage) and the "Notch Threshold" value.
This graphic representation is useful to set the most suitable value to assign to the "Notch Threshold" parameter and then to better identify the optimal threshold value which takes into account the variations of the signal and the small oscillations around zero.

The following figure shows an example of paper with the non-thermal paper printed with black marks: the outgoing voltage is constant while passing the white paper between two notches and presents a peak at each black mark.
In this case, the optimal value for the "Notch Threshold" parameter is placed about half of the peak (as shown in figure).

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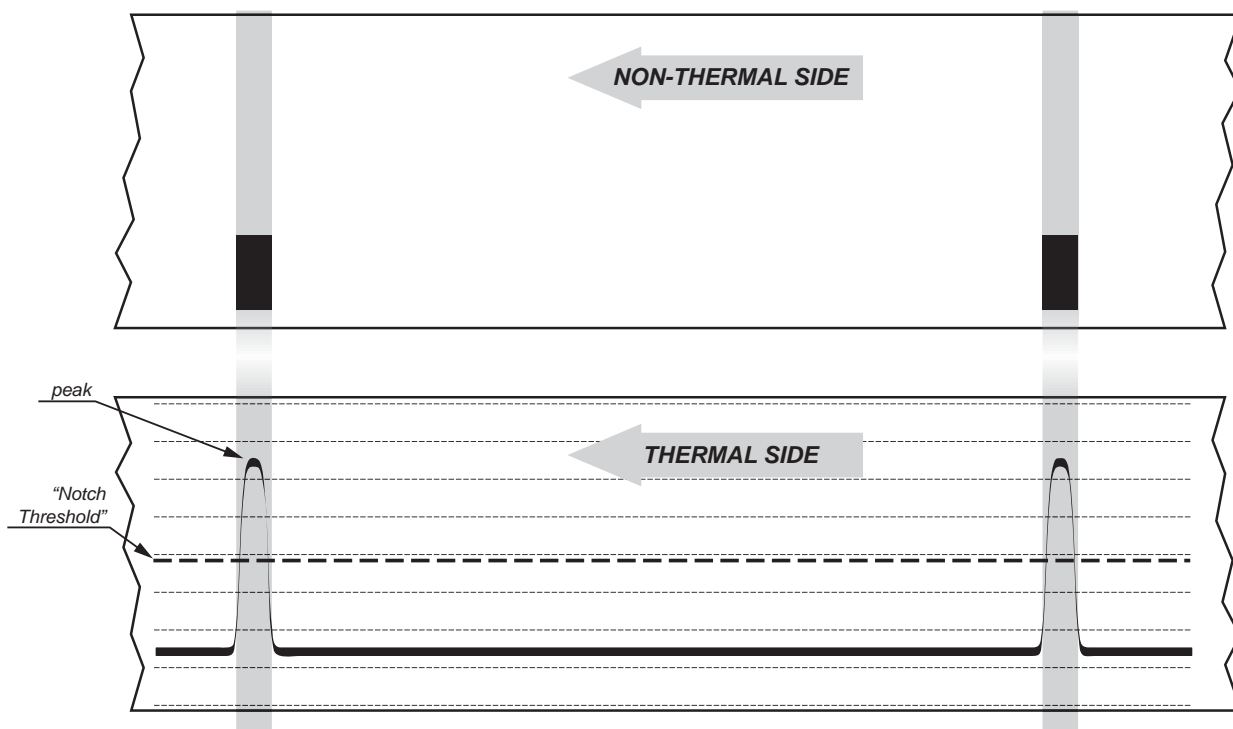
The following figure shows an example of paper with labels: the outgoing voltage is constant while passing the paper between two labels and presents a variation at each gap between two consecutive labels.
In this case, the optimal value for the "Notch Threshold" parameter is placed about half of the variation.
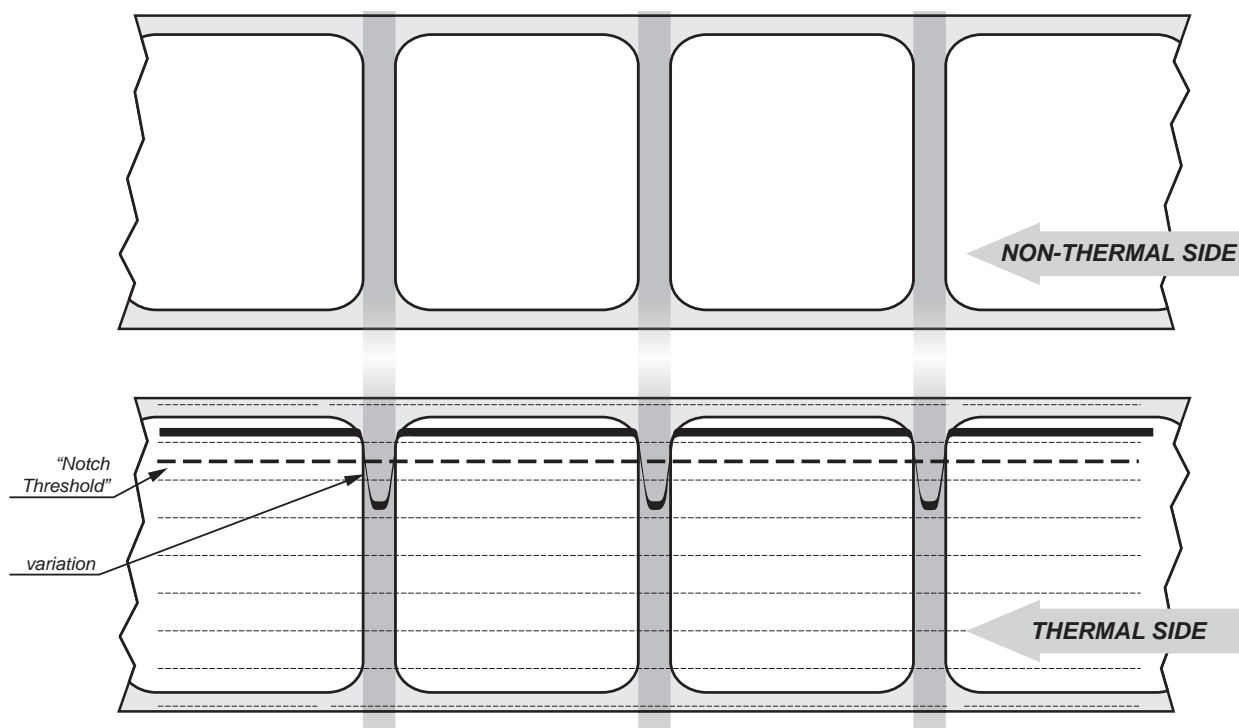
The following figure shows an example of paper with the non-thermal paper printed with black marks and other graphics (for example, a barcode): the outgoing voltage is constant while passing the white paper between two notches, presents a peak at each black mark and presents some "noise" at each barcode.
In this case, the optimal value for the "Notch Threshold" parameter is located about halfway between the peak value and the maximum value of the "noise" (as shown in figure).
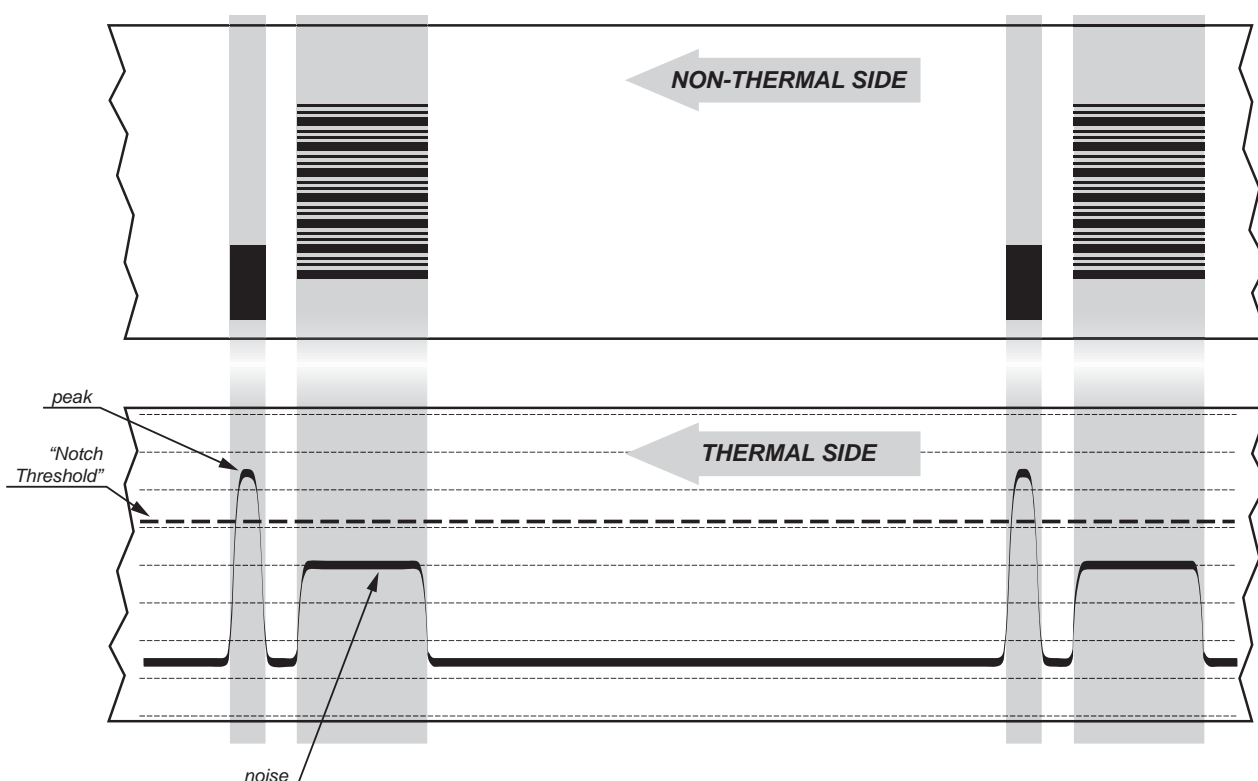
If the maximum value of "noise" read by the sensor is very close to the peak value, it might be difficult to place the value of the "Notch Threshold" at an intermediate point. In these cases, it is mandatory that the portion of paper between the point of printing end and the front notch is completely white (no graphics). In this way, the only next graphic detected by the sensor for alignment after the printing end will be the notch.

10.3 Alignment parameters

The "alignment point" is defined as the position inside the ticket to use for the notch alignment.
The distance between the notch edge and the alignment point is defined as "Notch Distance".
If the "Notch Distance" value is set to 0, the alignment point is set at the beginning of the notch.
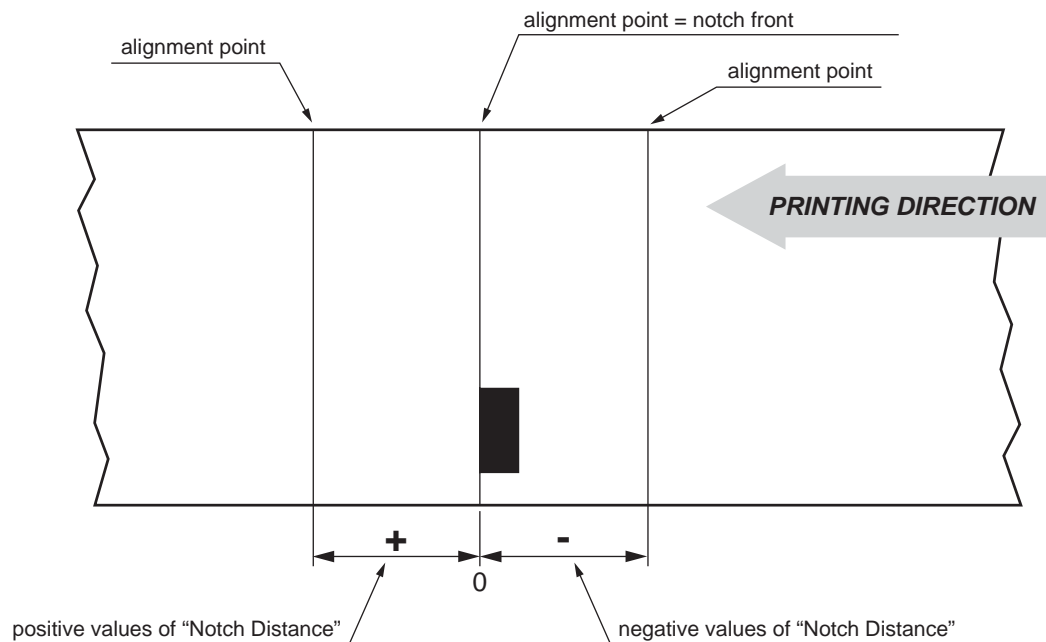
The value of "Notch Distance" varies from -5mm minimum and 32mm maximum (this value is fix according to the mechanical distance between notch sensor and printing head).

The following figure shows an example of paper with alignment point set by a positive value of "Notch Distance" ("Notch Distance" = + A):

PRINTING DIRECTION

+A

0

alignment point

notch front
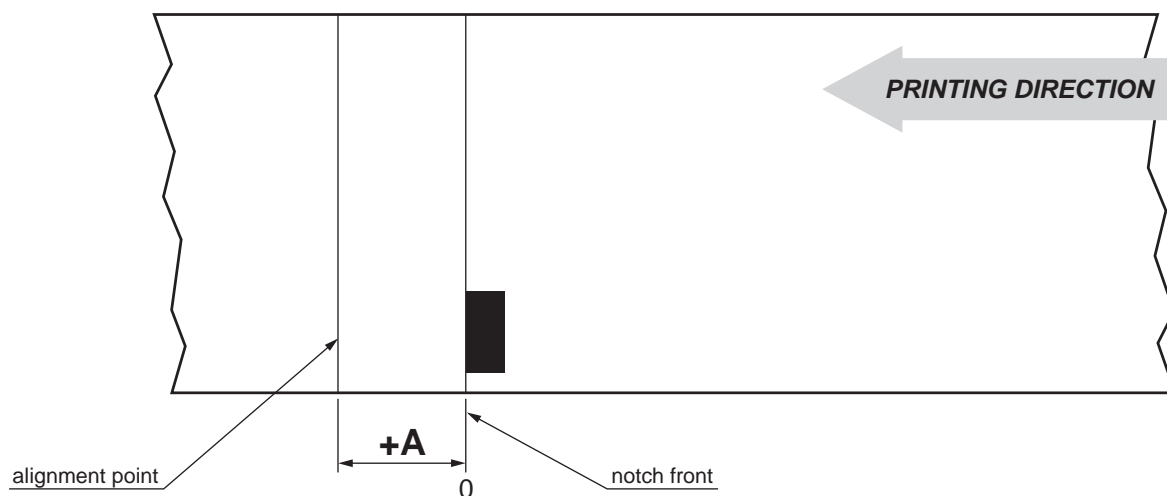
To set a negative value of the "Notch Distance" parameter is useful in cases where the alignment point refers to the notch printed on the previous ticket or where the desired cutting line is placed in the middle of the alignment notch (for example, for paper with holes or gap). In the following images, the value of "Notch Distance" parameter is set to -A.

PRINTING DIRECTION

- A

0

Notch front

Alignment point

PRINTING DIRECTION

- A

0

Notch front
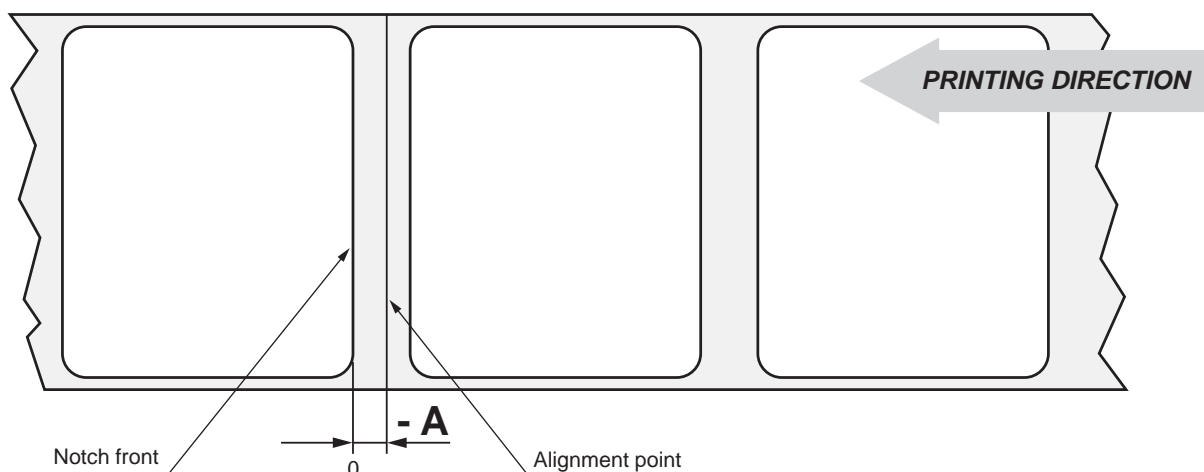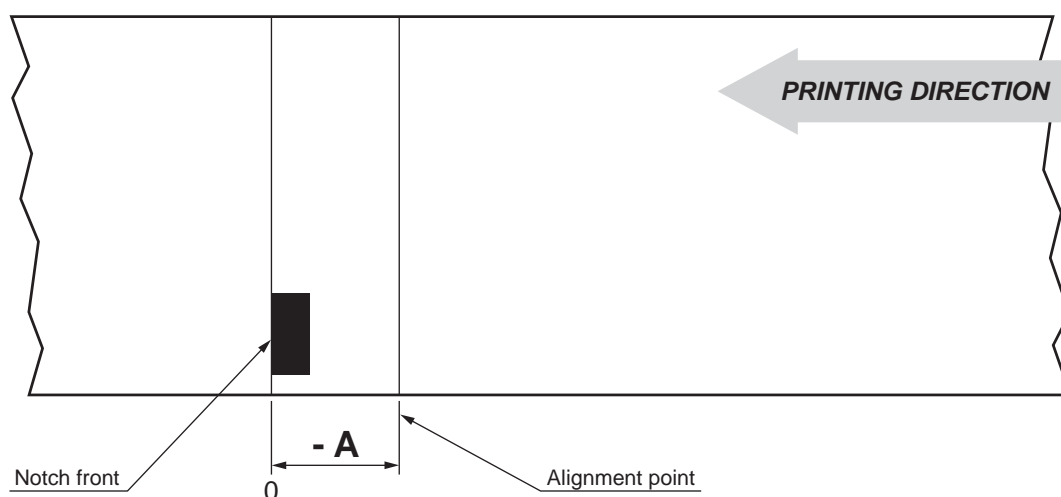
Alignment point

The following figure shows a section of the device with the distances (in mm) between the alignment sensors, the printing head and the cutter (cutting line):
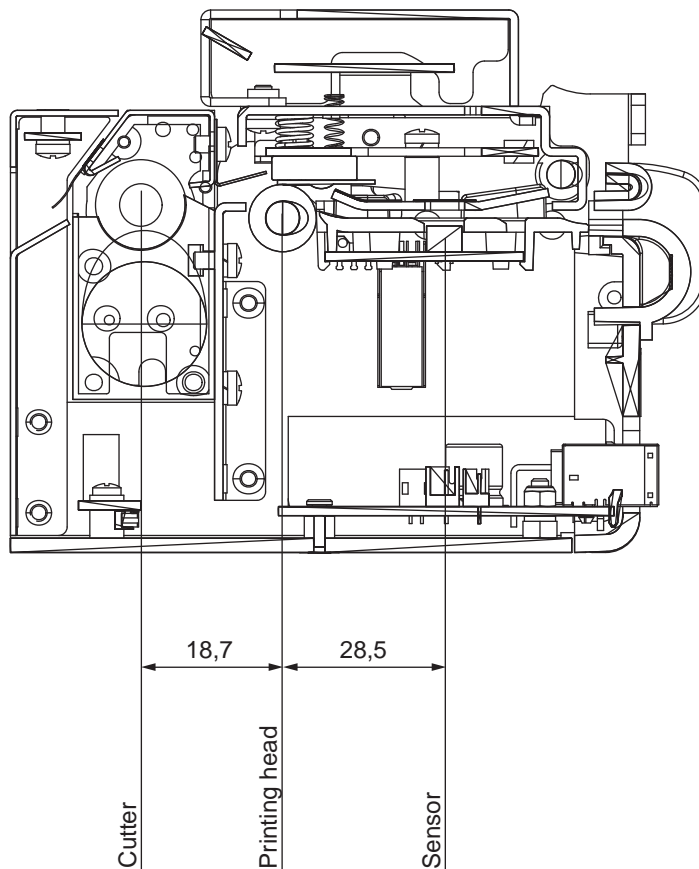
ESC/POS™ EMULATION

To define the alignment point you need to set the printer parameters that compose the numerical value of the "Notch Distance" parameter (see paragraphs 5.4 and 5.5).
For example, to set a notch distance of 15mm between the notch and the alignment point, the parameters must be set on the following values:

Notch Distance Sign   : +
*Notch Distance [mm x 10]*   : 1
Notch Distance [mm x 1]   : 5

The "Notch Distance" parameter, may be modified as follows:
- during the Setup procedure of the device (see chapter 5)
- by using the $1D $E7 command (for more details, refer to the Commands Manual)
- by driver.

10.4 Printing area

In order to print ticket containing only one notch and to not overlay printing to a notch (that will make it useless for the next alignment), it is important to well calibrate the height of the printing area of ticket according to the inter-notch distance.

The following figure shows an example of tickets with "Notch Distance" set to 0:
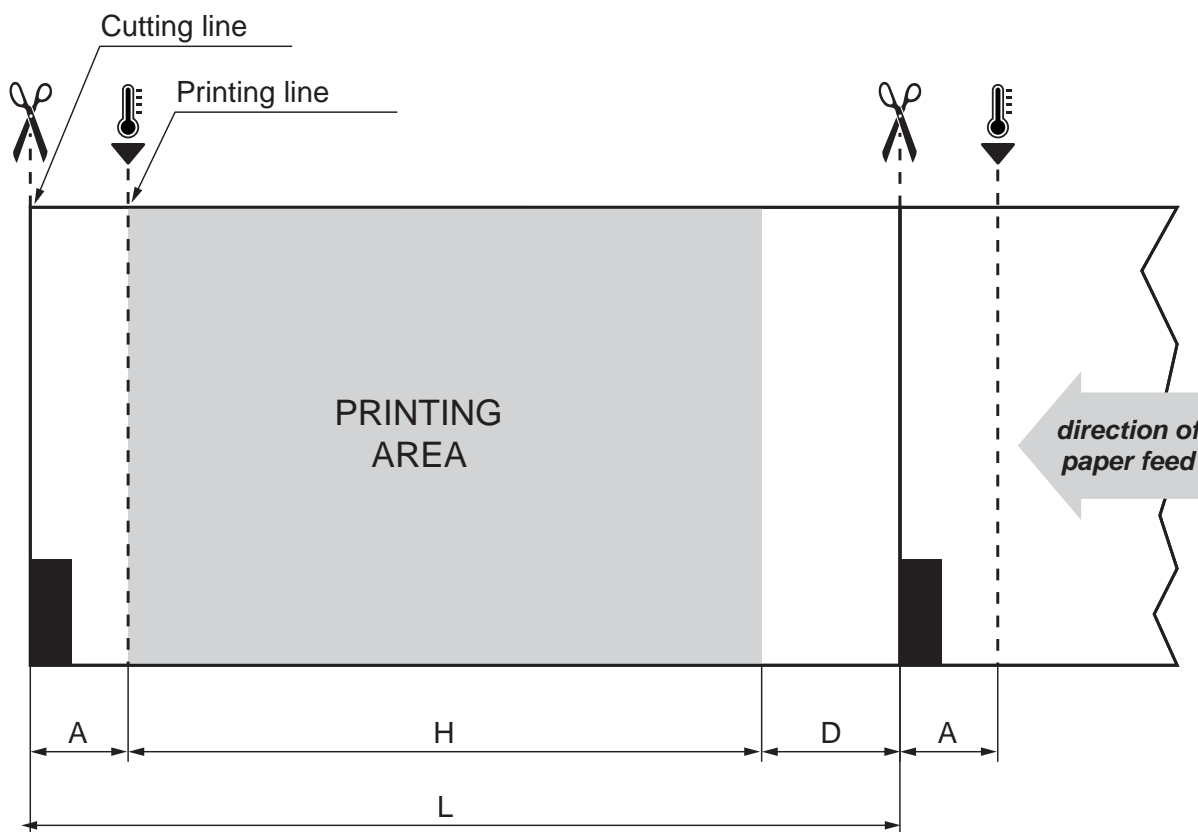
A   "Non-printable area" = "Distance between cutter/printing head" = 18,7mm (fixed distance)

H   Distance between the first and the last print line, called "Height of the printing area".

L   Distance between an edge of the notch and the next one, called "Inter-notch distance".

D   Automatic feed for alignment at the next notch.

To use all the notches on the paper, you must comply with the following equation:

$$H + A \leq L$$

The height of the printing area (H) can be increased to make no progress on alignment (D = 0) but no further.

11   TECHNICAL SERVICE

In case of failure, contact the Technical Service by sending an e-mail to support@custom.it detailing:
1.   Product code
2.   Serial number
3.   Hardware release
4.   Firmware release

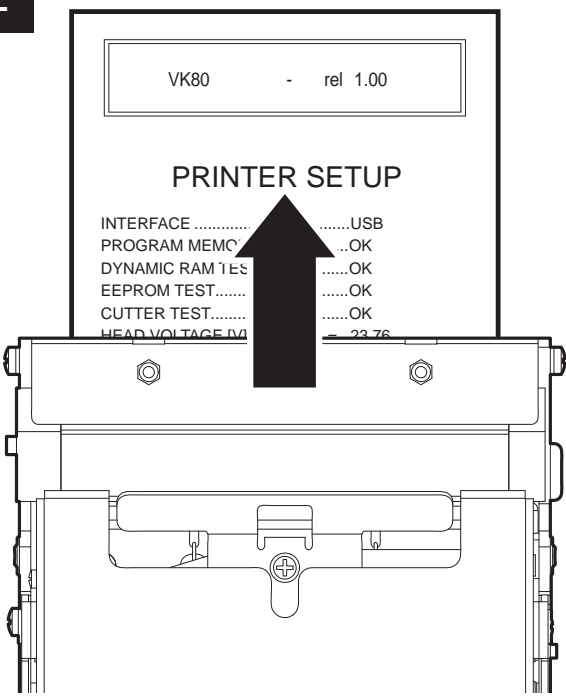To get the necessary data, proceed as follows:

1

XXXXXXXXXXXXXX   **Rx**

0000000000000000000

Write down the data printed
on the product label (see paragraph 2.2)

2

VK80   -   rel 1.00

PRINTER SETUP

INTERFACE ....USB
PROGRAM MEMO............OK
DYNAMIC RAM TES..........OK
EEPROM TEST.......   ......OK
CUTTER TEST........   ......OK
HEAD VOLTAGE [V]   = 23.76

Print a Setup report
(see paragraph 5.2)

3

firmware release

VK80   -   rel 1.00

PRINTER SETUP

INTERFACE ....USB
PROGRAM MEMORY TEST..........OK
DYNAMIC RAM TEST....................OK
EEPROM TEST..............................OK
CUTTER TEST.............................OK
HEAD VOLTAGE [V]   = 23.76

The Setup report shows
the firmware release

4

@

support@custom.it
Customer Service Department

Send an e-mail to the Technical Service,
with the data collected

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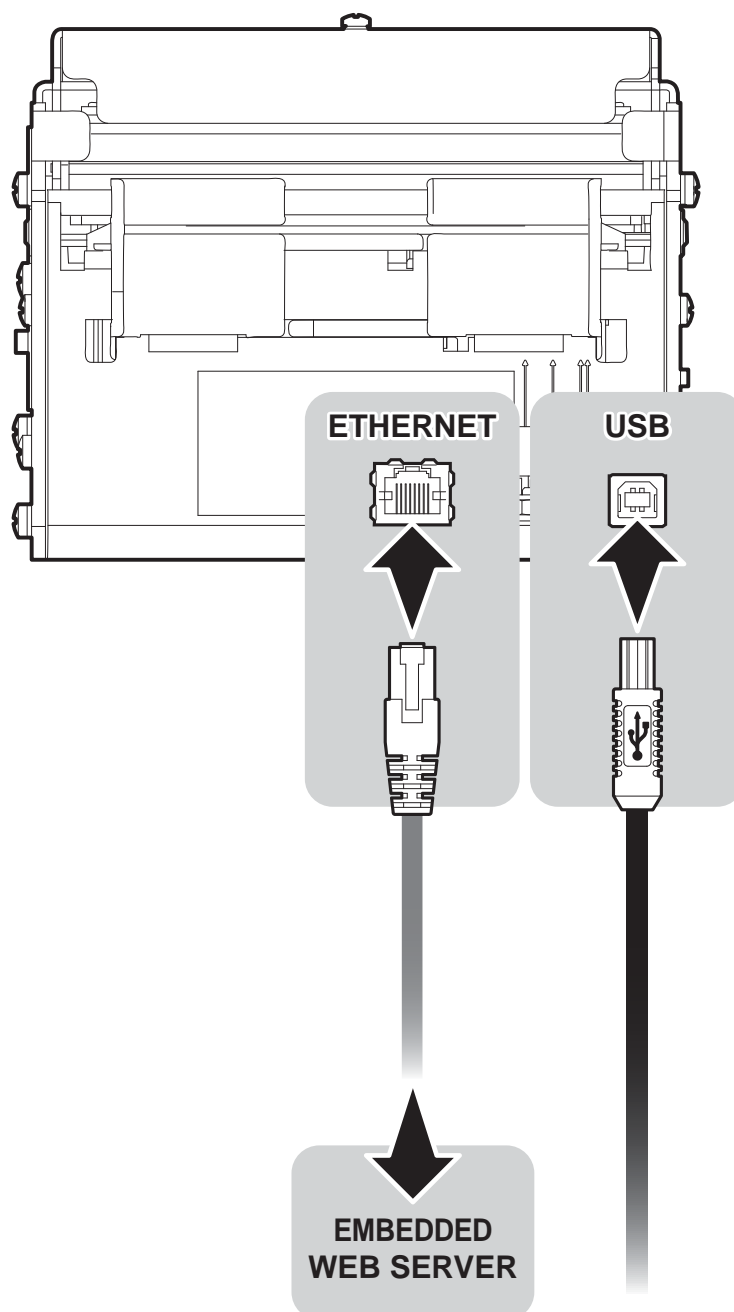# 12 ADVANCED FUNCTIONS

12.1 File sharing

The printer can be connected to a Personal Computer through two types of connections (see par.3.3):
1. with USB cable
2. with Ethernet cable.

In case of Ethernet connection, it is possible to manage drivers, fonts and logos of the printer and configure the operating parameters by entering the Embedded Web Server.
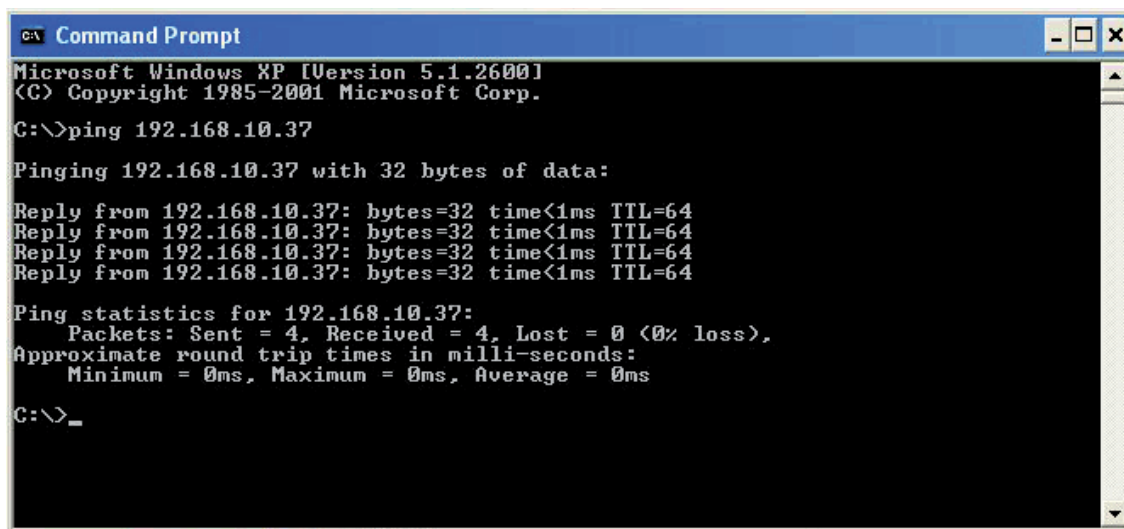
12.2 Embedded Web Server

Printers are equipped with an Embedded Web Server that allows to execute some operations on printers, through a clear web interface, including:
•   monitoring the printer status;
•   setting operating parameters;
•   configuring network settings;
•   managing the logos;
•   configuring the email service to make diagnostics and maintenance operations easier;
•   download printing drivers.

Before entering in the Embedded Web Server, check that:
•   the printer is connected and turned on;
•   the printer has a network connection based on the IP protocol;
•   the following ports are opened (if a Firewall is present on computer): 9100 (or differently set up). 15000, 15001, 15002;
•   have a Web browser on the computer;
•   the printer is connected to the network and its IP address and its Subnet Mask are set up in a correct way. To check the setting of these parameters, open a new terminal window and type "ping" on the command bar followed by the IP address of the printer. The picture shows an example of a positive result after the "ping" command. Otherwise, if connection isn't possible, to its IP address, a failure notice will appear.

   Example: ping 192. 168. 10. 37

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12.3 Embedded Web Server: access

To enter the Embedded Web Server, type the IP address assigned to the printer into Web browser. For example, if IP address of the printer is 192.168.10.37, type in the Web browser:

> http://192.168.10.37

On the screen will appear the internal default page that corresponds to the section "Device Info" The home page is divided into 6 areas whose functions are described below:

1. SECTIONS:
The web server has six sections listed within each web page. These sections are: Device Info, Printer Settings, Network Setup, E-mail Setup, Printer Support and Login.

2. TOOLS
The tools available within the chosen section are displayed as buttons (the tool for the "Device Info" section is a forced refresh of the operating parameters).

3. REAL TIME STATUS
Report a list of operating parameters controlled and monitored in real time (with a regular refresh of 15sec).

| < PRINTER > - Ethernet Interface |
| http://192.168.10.83 |
| USER : <username> |

1 — | Device Info | Printer Settings | Network Setup | E-mail Setup | Printer Support | Login... |

2 —

RealTime Status
Cover Open
Paper End
Near Paper End
Paper rolling
Autoload Paper
LF key pressed
OnOff Key Pressed
Over temperature Error
Supply Voltage error
Cutter error
Paper Jam
Notch Position OK
Notch Position Error

Model Information	
Printer Model:	< PRINTER MODEL >
Printer Type:	< PRINTER TYPE >
Firmware Version:	1.08
Hardware Version:	1.00
Printing Head Type:	T80
Interface:	Ethernet
Network Settings	
IP Address:	192.168.10.83
Subnet Mask:	255.255.240.0
Default Gateway:	192.168.0.5
MAC Address:	00-0E-E2-00-01-02
Printer Parameters	
Program Memory Test:	OK
Dynamc Memory Test:	OK
EEProm Memory Test:	OK
Cutter Test:	OK
Head Voltage [V]:	24.09
Head Temperature [°C]:	30
Paper Printed [cm]:	262169880
Cut Counter:	13965357
Power On Counter:	266
Paper End Sensor [V]:	0.79

3 — | Refresh |

NOTE:
To know the IP address of the printer, print the Set-up report of the printer (see chapter 5).

12.4 Embedded Web Server: login

To enter some sections and some configuration services, it is required the identification of the user and password. To make registration and to obtain the access to the restricted areas, when it is required insert the user name and the password as indicated in the following table:

User Name	Custom
Password	**AlwaysOn**

< PRINTER > - Ethernet Interface
http://192.168.10.83
USER : <username>

Device Info	Printer Settings	Network Setup	E-mail Setup	Printer Support	Login...

RealTime Status
Cover Open
Paper End
Near Paper End
Paper rolling
Autoload Paper
LF key pressed
OnOff Key Pressed
Over temperature Error
Supply Voltage error
Cutter error
Paper Jam
Notch Position OK
Notch Position Error

Printer Login...

Please insert **Username** and **Password**.
Once you enter the correct username and password, you will be logged in to this printer configuration menus.

Username:

Password:

Login...

1

NOTE:
Respect capital and small letters as indicated in table.

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